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INSULIN ALLERGY

REPORT OF SEVERE CASE WITH SUCCESSFUL DESENSITIZATION*

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SHREVEPORT

The literature abounds with reports of reactions of various kinds following the hypodermic administration of insulin, but most of these refer to local or systemic manifestations of sensitivity to the protein of the animal or animals from which the special preparation is prepared; for example, I have, at times, noted local urticarial wheals in patients taking a certain lot of insulin of a certain manufacturer, this reaction being avoided by changing to another make or another lot number.

Allergists have been quoted as saying that allergic individuals do not contract tuberculosis nor develop diabetes mellitus, but I suppose "exceptions prove the rule", for there have been a few instances reported wherein a person has been sensitive to the insulin unit itself, and insulin being a protein in nature, these reactions are protein allergy. Joslin, however, does not agree with this view and states: "Associated diseases, notably allergy, tuberculosis and epilepsy, are prone to occur in diabetics. Allergy has been demonstrated by Kern to recur frequently in diabetic families . . . . Eight of our children have had asthma."[1] Joslin refers, also, in the same book, to cases wherein patients are sensitive to insulin of one or more manufacturers' products and not another. This is not true insulin allergy, but, as stated above, is due to the foreign protein.

*Read before the fifty-ninth annual meeting of the Louisiana State Medical Society on May 4, 1938 at New Orleans.

Allan and Sherer report a number of cases of insulin allergy, varying from mild local to severe systemic manifestations, they concluding: "If there is no type of insulin free from allergic effect, attempts should be made to bring about desensitization by beginning treatment with minimal dosage and increasing the amount gradually . . . The occurrence of allergic manifestations after treatment with insulin throws some light on the nature of the hormone. It indicates that the protein of animal insulin is different from the protein of human insulin . . . and suggests that the pancreatic extracts contain another pancreatic protein besides insulin."[2] This last statement does not solve the trouble in the case which I shall report, as the patient was markedly sensitive to all forms of insulin, including the crystalline product.

Bayer reports a severe allergic phenomenon developing in a patient who had been taking insulin for some time and who was temporarily desensitized in one day with gradually increasing dosage, given at intervals of a few minutes. She concludes: "Insulin allergy, although rare, may present a very urgent problem when it occurs."[3] Collens, Lerner and Fialka report a quick therapeutic result from repeated ingestions of histamine phosphate.[4] Lewis concludes: "(1) Insulin protein is an active antigen; (2) since insulin protein does not react in common with pancreas protein, its specificity is independent of that of the major constituents of the pancreas; (3) insulin proteins from different animal sources are immunologically closely related."[5]

Following a suggestion from Russell M. Wilder[6], I consulted the well-known allergist, F. M. Rackeman[7] relative to my problem; he

referred me to Lewis' article, quoted above, and suggested gradual desensitization as the only way, advising that the intravenous route is the best method of producing the result rapidly, but warning that it is more dangerous.

Joslin and Marble[8], of the Joslin Diabetic Clinic, were kind enough to make several valuable suggestions, including information and advice relative to crystalline insulins.

CASE REPORT

H. L. H., aged 23, a robust, muscular young man, had been allergic since childhood, after having attacks of asthma and urticaria. In 1930, he was thoroughly tested by B. G. Efron of New Orleans, who found him sensitive to house-dust, woolens, sea food, cheese and various vegetables; since eliminating them as far as practicable, he had been almost entirely free from these troublesome conditions. In March, 1937, it was noted that he was rapidly losing weight and so, with a family history of diabetes, a specimen of urine was requested, it showing heavy with sugar and with a fasting blood sugar of 220 mgm. Being anxious for him to regain some weight, an appropriate diet was prescribed and twenty units protamine insulin given every morning. He got along very well until after he had taken twelve doses, when he awakened one morning with urticaria, generalized, with marked swelling of the face.

At this time, I was in St. Louis, attending a meeting of American College of Physicians and I was informed of the reaction. I consulted Wilder, who referred me to Lloyd L. Ely of Frederick Stearns & Company, who was kind enough to have a supply of Stearn's crystalline insulin sent to me, he feeling that this would best serve my purpose. In the meantime, I advised that the protamine insulin be discontinued, but this had already been done by an associate, who tested the patient with a minute dose of regular insulin, which produced a marked wheal. When I received the crystalline product, I personally administered twenty units of it, with confidence, feeling that this was the ideal preparation for him. In 15 minutes, I was called back to the patient and found him with urticaria, swelling of head and face, and itching; I administered 0.5 c.c. epinephrine and advised soda baths. As soon as the epinephrine effect wore off, the rash returned and was accompanied by asthmatic wheezing and a choking sensation, which became less marked after another subcutaneous dose of epinephrine. In about 30 minutes, all these symptoms again recurred and were worse than ever; this time the hypodermic dose did not produce results and the patient became frantic; we then gave him ½ c.c. epinephrine solution intravenously, causing quick subsidence of symptoms. However in 45 minutes more, the attack recurred for the fourth time and again the intravenous route was necessary. By this time, the patient was exhausted and he was so trembly from the epinephrine that it was necessary to administer ¼ grain morphia. During the balance of the day, he had only mild attacks and no further medication was given.

Following this experience, I advised Ely of the unusual sensitivity and he agreed with me that the patient must be allergic to the insulin molecule, and he suggested trying desensitization.

I reported the matter, also, to Weaver of the Lilly Research Laboratories, following which the laboratory sent me a lot of regular insulin made from beef pancreas, one made from pork and one lot of crystalline insulin. I tested the patient by giving 0.05 c. c. of each, intracutaneously, in the forearm; he soon got a decided wheal about each test, followed in about ten minutes by the same severe systemic reactions which he had exhibited following the therapeutic dose of crystalline insulin. It was necessary to administer four doses of epinephrine (one intravenously) and also the one dose of morphia, following which the patient was completely exhausted.

METHOD OF DESENSITIZATION

I then realized that, if insulin therapy was necessary, it would require careful desensitization. After trying other therapeutic measures for several months without any gain of weight or strength, I started the desensitization, very cautiously, viz:

BOTTLE 1

Date	c. c.		Unit
12/15	—0.1	=	1/250
12/16	—0.2	=	1/125
12/17	—0.3	=	1/83
12/18	—0.4	=	1/62
12/19	—0.5	=	1/50

1 c.c. = .04 unit regular insulin.

BOTTLE 2

Date	c. c.		Unit
12/20	—0.05	=	1/50
12/21	—0.1	=	1/25
12/22	—0.2	=	1/12
12/23	—0.3	=	1/8
12/24	—0.4	=	1/6
12/25	—0.7	=	7/25

1 c. c. = .4 unit regular insulin.

BOTTLE 3

Date	c. c.		Unit
12/26	—0.08	=	1/3
12/28	—0.08	=	1/3
12/30	—0.1	=	2/5
1/1	—0.15	=	3/5
1/3	—0.2	=	4/5
1/5	—0.25	=	1
1/7	—0.3	=	1.2
1/9	—0.4	=	1.6
1/11	—0.5	=	2

1 c.c. = 4 units regular insulin.

BOTTLE 4

Date	c. c.		Unit
1/13	—0.05	=	2
1/15	—0.08	=	3.2
1/17	—0.1	=	4
1/19	—0.15	=	6
1/21	—0.2	=	8
1/23	—0.25	=	10
1/24, 1/25	—0.25	=	10
1/26, 1/27, 1/28	—3.0	=	12
1/29, 1/30	—0.35	=	14
1/31, 2/1-2/9 dly.	—0.4	=	16
2/10-2/16 dly.	—0.45	=	18
2/17-2/26 dly.	—0.5	=	20
2/27-3/1 dly.	—0.6	=	24

1 c. c. = 40 units regular insulin.

The reaction from 1/3 unit on December 26 was rather severe and required epinephrine; after that, I gave the doses every second day, instead of every day, until we arrived at dosage of real therapeutic value.

It will be noted that, as the desired dose was reached, I became more cautious about increasing, especially if slight local reaction was noted. Twenty-four units seemed to give the desired effect, in so far as the quick results of standard or regular insulin are concerned, but, as usual with this quick-acting preparation, it would spend itself in six to eight hours and the patient would be unprotected the rest of the time. Hence, I considered it advisable to shift him over to protamine zinc insulin, but I did so with some trepidation, as the protamine oil is a fish derivative and the patient is known to be allergic to sea food. However, this is my record:

Date	c. c.		Unit
3/2	—0.6	=	24
3/3	—0.6	=	24
3/4-3/11 dly.	—0.55	=	22
3/12	—0.55	=	22
3/13-3/20 dly.	—0.45	=	18
3/20-4/15 dly.	—0.6	=	24

Protamine zinc insulin — 40 units to c.c.

Since dropping back after each evidence of reaction, I have been enabled to increase back to the 24 units, which he now tolerates well and which gives satisfactory results for the diabetic condition. I might add, in passing, as a matter of interest, that, after noting the local reactions from the protamine zinc insulin, I tested him intracutaneously with both the regular and the crystalline preparation of Stearns and that he showed definite sensitiveness to both of them, more marked with the regular, which he had taken routinely before. However, as he showed skin reactions to both of them more marked than had been observed with the protamine zinc insulin, I decided it would be wiser to continue him on the latter.

As a precautionary matter, during the entire desensitization process and even up to the present time, I fill the needle with 1:1000 epinephrine solution before drawing up the insulin, and I feel that thereby I have avoided more reactions of the allergic kind.

SUMMARY AND CONCLUSIONS

1. It has been clearly demonstrated that there are two kinds of allergic reactions possible with insulin therapy, for example: that due to the protein of the animal from which the substance is extracted and that due to sensitivity to the insulin protein molecule, the latter being more serious and harder to overcome.

2. Properly administered, epinephrine solution is the "sheet anchor" in allergic manifestations.

3. Patients sensitive to the insulin molecule are allergic, in varying degree, to all insulin preparations.

4. With proper care and patience, it is possible satisfactorily to desensitize even the severe "reactors".

5. When an allergic individual is taking one

kind of insulin satisfactorily, caution should be used in changing the type and the change should never be made without first testing for sensitivity.

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DISCUSSION

Dr. B. G. Efron (New Orleans): Opinion differs widely as to the incidence of insulin sensitivity. Published reports give an incidence that varies from .004 per cent to 14.5 per cent. The reaction observed may be local or constitutional. The local reactions are characterized by swelling, redness, and itching. Urticaria is the usual type of constitutional reaction. Of 100 cases of insulin reaction reported from the Mayo Clinic, 84 were mild local reactions, 12 were severe local reactions, and only four were constitutional reactions. None of the cases reported from the Mayo Clinic had as severe manifestations as the case reported by Dr. Herold.

Most reactions to insulin have occurred in diabetics who were without personal or familial history of allergy. The incidence of allergy in diabetics is quite small. Insulin sensitivity has been reported by Sammis in a non-diabetic patient who was a known allergic. Sammis' patient was sensitive to beef, sheep, and synthetic insulin. The only case of insulin hypersensitivity I have observed personally was in a diabetic who was sensitive to all types of insulin, and whose symptoms were manifested by urticaria. Sensitivity to insulin may be limited to one type, such as beef insulin, and changing from beef to pork or sheep or crystalline insulin is all that is required in such cases in the way of treatment. On the other hand, when sensitively to insulin exists, regardless of its source, as in the case presented, and insulin is required to control the diabetes, a very important therapeutic problem becomes manifest. Kaufman reported the desensitization of three cases by one or two intracutaneous injections of 4 to 6 units. About five years ago, Bryce reported successful desensitization of an insulin sensitive diabetic by gradually increasing doses until the required daily dose was given. This observation, together with fact that such a procedure is the one which is used in routine allergic practice, prompted me to recommended to Dr. Herold the technic which he described.

With reference to getting severe systemic reactions which require epinephrine, epinephrine should be given immediately by every possible route, starting with ½ c. c. or 1 c. c. hypodermically; then if necessary, intravenously. There is another drug, aminophylline which proves of great value in controlling some allergic manifestations. Aminophylline can be given either in 4 mg. or 7½ mg. doses intravenously. If the latter is used it must be diluted to 10 c. c. and very often it will stop some allergic reactions that adrenalin has failed to check.

Dr. Randolph Lyons (New Orleans): I was very much interested in Dr. Herold's case because we all treat numerous diabetics, and since the advent of insulin, naturally, I have used it constantly but have never seen a case such as he described, which shows how rare such severe reactions must be, fortunately for us and our diabetic patients. We have all had local reactions. I would like to know if he has any statistics on how frequent such cases are? I cannot say how many cases I have treated with insulin, certainly a great many, but I have yet to see one like his.

Dr. Herold certainly deserves credit for the care with which he desensitized the patient. I would have felt shaky about giving the patient insulin, even in small doses, after such a severe reaction.

Dr. A. Herold (In closing:) Dr. Rackeman advised desensitization preferably by the intravenous route, but warned that it was more dangerous. And I noticed that Dr. Bayer in the Journal of the American Medical Association reports a patient desensitized in the course of a day.

There have been several cases reported, but I do not suppose anyone had a worse case than mine.

A lady from New Orleans who was very sensitive to all types of insulin was in Joslin's clinic a few years ago and got some crystalline insulin; it was the only kind of insulin she could take. I tried crystalline insulin put out by the same pharmaceutical house and it caused urticaria and the other allergic manifestations.

CAUSES OF BLINDNESS IN LOUISIANA

A REVIEW OF SEVEN HUNDRED CASES*

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NEW ORLEANS

In this review, a person is considered industrially blind who has vision in the better eye

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with correcting glass of 20/200 or less or a disqualifying visual field defect. Also, this group includes only indigent persons between the ages of 16 and 64 who are residents of this state and which group is defined and provided for by the cooperating Federal and State Social Security Act. About a year ago this study was initiated and carried on by the cooperative efforts of the Federal and State governments through the direct supervision of the Louisiana State Department of Public Welfare. The primary object of this study was to provide necessary relief to the indigent blind coming in this special classification. The survey is still in progress and the total number of cases in this category will far exceed this present number. It is also necessary to stress the fact that this number and survey does not include innumerable blind people falling into other age and economic groups. While the immediate objective of this work has been to provide relief for people badly in need of help, its ultimate goal should and must be so effectively to prevent blindness in all classifications that expenditures for these unfortunates can be gradually reduced to a minimum.

To contribute to the usefulness and effectiveness of statistical data on blindness accumulating in our nation, I have used the etiologic and topographic classification of the Causes of Blindness adopted by the American Society for the Prevention of Blindness and by the American Academy of Ophthalmology and Otolaryngology. While such a classification is useful, is a step forward and should be generally adopted, it does not provide the flexibility necessary to convey the full story in all cases of blindness. In the great majority of cases the cause of blindness is multiple and often far-reaching, there being in some instances five or six contributing factors, each doing its share of destruction. Also, I would stress that at times the causes of blindness in one eye are very different from the causes in the other eye and, therefore, should be classified differently. The statistical data collected from this first seven hundred cases will now be stated. I estimate that 73 per cent of these blind cases could be prevented.

CAUSES OF BLINDNESS

Topographic and Etiologic

Hypertension (glaucoma)		76
Refractive errors		13
Myopia:		
Due to syphilis	1	
Toxic poisonings (not specified)	1	
Congenital	7	
Not specified	4	
Motor anomalies		
Development anomalies		17
Albinism (congenital)	2	
Anophthalmos (congenital)	1	
Megalophthalmos (congenital)	2	
Microphthalmos (congenital)	12	
Degenerative changes		46
Phthisis bulbi	29	
Gonorrhea	10	
Meningitis	2	
Syphilis	4	
Pneumococcal ulcer	1	
Gunshot wounds	6	
Fireworks	1	
Etiology undetermined	5	
Other degenerative changes (specified)	4	
Gunshot wounds	3	
Consanguinity	1	
Panophthalmitis and endophthalmitis	13	
Gonorrhea	3	
Typhoid	1	
Fireworks	1	
Trauma	4	
Industrial injuries	2	
Diseased tonsils	1	
Etiology undetermined	1	
Conjunctiva		2
Pterygium	2	
Cornea		106
Interstitial keratitis (syphilis)	9	
Phlyctenular keratitis	1	
Keratitis	23	
Meningitis	1	
Smallpox	1	
Syphilis	3	
Tuberculosis	1	
Trauma	4	
Toxic poisoning (gallbladder)	1	
Toxic poisoning (not specified)	6	
Systemic diseases (not specified)	2	
Etiology undetermined	4	

Ulcerative keratitis (corneal ulcers)		62
Gonorrhea	16	
Measles	1	
Meningitis	1	
Ophthalmia neonatorum		
Gonorrhea	26	
Other	1	27
Scarlet fever	1	
Smallpox	3	
Syphilis	1	
Typhoid fever	2	
Fireworks	1	
Trauma	5	
Exophthalmic goiter	1	
Pellagra	2	
Vascular disease	1	
Pannus		11
Trachoma	11	
Iris and ciliary body		97
Iridocyclitis (uveitis)		85
Measles	1	
Meningitis	1	
Scarlet fever	1	
Smallpox	1	
Syphilis	20	
Tuberculosis	20	
Typhoid fever	4	
Gunshot wounds	11	
Fireworks	3	
Injuries (not specified)	1	
Sinuses	2	
Teeth	2	
Toxic poisonings (not specified)	10	
Faulty diet	2	
Diabetes	1	
Nephritis	1	
Etiology undetermined	23	
Sympathetic ophthalmia		12
Gunshot wounds	2	
Trauma (specified)	5	
Injuries (not specified)	5	
Crystalline lens		109
Lens opacity (cataract)		108
Congenital	35	
Juvenile	12	
Senile	30	
Hereditary	7	
Traumatic	10	
Diabetic	5	
Secondary to other diseases	9	
Dislocated lens (hereditary)		1
Choroid and retina		74
Choroiditis		9
Syphilis	3	
Hereditary origin	3	
Etiology undetermined	3	
Retinitis		2
Diabetes	1	
Etiology undetermined	1	
Chorioretinitis		28
Syphilis	4	
Tuberculosis	1	
Gunshot wounds	1	
Toxic poisonings (not specified)	1	
Diabetes	1	
Nephritis	1	
Congenital origin	3	
Hereditary origin	3	
Consanguinity	1	
Etiology undetermined	12	
Detached retina		5
Syphilis	1	
Typhoid fever	1	
Trauma (specified)	1	
Injuries (not specified)	1	
Etiology undetermined	1	
Retinitis pigmentosa		30
Hereditary origin	9	
Consanguinity	11	
Not specified	6	
Etiology undetermined	4	
Optic nerve		158
Optic atrophy		150
Meningitis	6	
Smallpox	1	
Syphilis	58	
Typhoid fever	4	
Infections (not specified)	5	
Influenza	1	
Encephalitis	1	
Trauma (specified)	5	
Injuries (not specified)	1	
Sinusitis	5	
Carious teeth	2	
Toxic poisonings (specified)		
Malaria—quinine	5	
Toxic poisonings (not specified)	3	
Neoplasms		
Brain abscess	1	
Tumors	5	6
Diabetes	2	
Vascular disease	5	
Non-infectious disease, central nervous system	1	
Diseases of pregnancy and childbirth	1	
Systemic diseases (not specified)	4	
Congenital origin	6	
Hereditary origin	5	

Consanguinity	1	
Etiology undetermined	21	
Multiple sclerosis	1	
Optic neuritis		3
Toxic poisoning (teeth)	2	
Banti's disease	1	
Neuroretinitis		5
Syphilis	2	
Toxic poisoning (teeth)	1	
Nephritis	1	
Etiology undetermined	1	
Miscellaneous and ill-defined		2
Pemphigus	1	
Trichiasis	1	

ETIOLOGIC FACTORS IN BLINDNESS

	No. of Cases	Percentage
Pterygium, pemphigus, trichiasis	4	
Glaucoma	76	10.9
Gonorrhea (excluding O. N.)	29	4.1
Measles	2	
Meningitis	11	1.6
Ophthalmia neonatorum	27	3.9
Scarlet fever	2	
Smallpox	6	
Syphilis	106	15.1
Trachoma	11	1.6
Tuberculosis	3	
Typhoid fever	12	1.7
Pneumococcal ulcer	1	
Influenza	1	
Encephalitis	1	
Infections (not specified)	5	
Gunshot wounds	23	3.3
Fireworks	6	
Non-industrial injuries	1	
Trauma (including burns), (specified)	34	4.9
Industrial injuries, (not specified)	2	
Injuries, (not specified)	8	1.1
Sinuses	7	1.0
Tonsils	1	
Teeth	7	1.0
Banti's disease	1	
Malaria-quinine	5	
Gallbladder	1	
Toxic poisonings, (not specified)	21	3.0
Neoplasms	6	
Brain abscess	1	
Brain tumor	5	
Senility	30	4.3
Toxic goiter	1	
Faulty diet	2	
Pellagra	2	
Anemia	1	
Diabetes	10	1.4
Nephritis	3	
Vascular diseases	6	
Non-infectious diseases, central nervous system	1	
Diseases of pregnancy and childbirth	1	
Systemic diseases, (not specified)	6	
Cataracts, secondary to other diseases	9	1.3
Cataracts, juvenile	12	1.7
Eye diseases of congenital origin	68	9.9
Eye diseases of hereditary origin	28	4.0
Eye diseases due to consanguinity	14	2.0
Not specified	10	1.4
Etiology undetermined or not specified	75	10.6
Multiple sclerosis	1	
	700	89.8
Cases responsible for 1% or more	89.8	
Cases responsible for less than 1% (73)	10.2	100%

AGE AT ONSET OF BLINDNESS

Birth to 5 years	141
6 years to 15 years	62
16 years to 25 years	83
26 years to 35 years	118
36 years to 45 years	121
46 years to 65 years	175
	700

PERCENTAGE ACCORDING TO TOPOGRAPHY

	Cases	Per cent
Glaucoma	76	10.8
Phthisis bulbi	29	4.1
Corneal ulcers	62	8.9
Iridocyclitis	85	12.2
Cataracts	109	15.4
Chorioretinitis	28	4.0
Retinitis pigmentosa	30	4.3
Optic atrophy	150	21.3
All other diagnoses	131	19.0
	700	100.0

DEGREE OF VISUAL ACUITY

Group I.	No light preception	311
Group II.	Only light preception	175
Group III.	Hand motion	43
Group IV.	Finger count	114
Group V.	20/200	45
Group VI.	20/200 but with field constriction	12
		700

CASES OF CONGENITAL SYPHILIS

1. Choroiditis, blind from infancy.
2. Interstitial keratitis, blind from birth.
3. Congenital cataracts, blind from birth.
4. Interstitial keratitis, blind from youth.
5. Blind from congenital lues—no diagnosis given.

6. Phthisis bulbi, blind at age of seven years.
7. Gonorrheal ophthalmia, blind from birth and has congenital lues.
8. Congenital cataracts, blind since three months old.
9. Interstitial keratitis, blind since age of four years.
10. Juvenile cataracts and congenital syphilis. Blind at 16 years.
11. Chorioretinitis, blind from birth.
12. Phthisis bulbi and iridocyclitis, blind from youth.
13. Chorioretinitis, blind from infancy.
14. Interstitial keratitis, blind since 23 years (also is deaf).
15. Congenital syphilis and optic atrophy.
16. Gonorrheal and congenital syphilis, blind from birth (two patients).
17. Uveitis, blind from childhood.
18. Optic atrophy, blind at 12 years of age.
19. Uveitis, blind from infancy.
20. Phthisis bulbi, blind at eight years.
21. Interstitial keratitis, blind at 13 years.
22. Chorioretinitis, blind at four years.
23. Keratitis, blind at 13 years.

OBSERVATIONS AND RECOMMENDATIONS

Syphilis caused 15.1 per cent blindness in this group, or 106 out of 700. Syphilis is ravaging our nation and we must wage a relentless, fierce fight against this disease. It must be looked upon as a menace to personal and public health and there must be laws enacted and enforced to compel all people with the disease to receive adequate treatment whether or not they personally want it. A Federal law should cover this lax situation. Night clinics must be opened and kept open for diagnosis and treatment and a very efficient follow-up system to insure complete treatment.

Glaucoma caused 10.9 per cent blindness, or 76 out of 700. A widespread alertness for the earliest detection of glaucoma must be maintained. A system of study and observation must be instituted and developed to detect the preglaucomatous patient long before the active onset of the usual revealing signs and symptoms. Ocular tensions must be recorded on a far greater percentage of patients in both private and clinical practice. Special subdivisions for glaucoma patients should be set aside in our clinics and adequate contact and follow-up maintained through trained medical social workers. There should be national coordination and cooperation of these special clinical groups in order to facilitate and accelerate treatment and investigation of this disease group.

Congenital Defects and Hereditary Deficiencies: This group contributed 13.9 per cent and constitutes one of the most hopeless and pitiful groups encountered. Many times generation after generation of the same defects have been handed down through as many as eight almost identical children to the family. The great majority of these are also deaf and dumb, many are feebleminded and most of them reveal endocrine disturbances. Who will solve this very vital problem?

Consanguinity contributed 2 per cent of blindness and such relations must be generally condemned. Where degeneracy exists fertile unions must be prohibited at all costs, as it is accentuated in the offspring.

Gonococcal infections in the eyes caused 4.1 per cent of blindness, chiefly in the infant and very young child. The same statements made about syphilis can also apply to gonorrhea. There must be more rigid supervision of childbirth and prophylaxis and treatment at birth. Non-medical practitioners doing obstetrics must be gradually eliminated.

Cataract must be regarded as a chronic progressive disease. A marked change in our attitude toward and a much more energetic handling of these cases will result in stopping the progress of some, inhibiting or slowing down the progress of others and in all cases the general health can be improved and the internal structures of the eye protected and kept healthy. In most cataract cases, as in dozens of other eye diseases, an early diagnosis is impossible through a small pupil. Early diagnosis is extremely important in dealing with the eye as damage is permanent in the highly specialized, delicate visual apparatus. Therefore, in most cases, a complete eye study is impossible and sadly inadequate unless the pupil be dilated.

Crossed Eyes: Every infant and young child should be watched for crossing of the eyes and if such a tendency should persist to the twelfth month an eye physician should be consulted. Early treatment after careful study should greatly reduce the number going to

operation later and preserve many useful eyes that would otherwise go blind. The old advice to "let the child grow out of it" cannot be too strongly condemned.

The Eye as Revealer of Distant or General Disease: A great number of general and often serious diseases are frequently detected first by a careful and complete eye examination with enlarged pupils. A hasty or incomplete examination would fail to reveal these telling signs and be the means of the patient suffering great damage or even death. The eye physician also frequently gleans impressions of anemias, anxiety neuroses, inattention, characteristic breath odors, manner of locomotion and a thousand other defined and undefined characteristics and impressions which lead to valuable and timely suggestions to the patient and to his family physician.

On Diet Generally: Inadequate, insufficient and improper diet is contributing heavily not only to causes of blindness but to many other diseased conditions, physical debility, poor bone and muscle development, retarded mentality and lack of ambition. This is resulting from a combination of poverty, ignorance, laziness, poor heredity and the disposition of so many people today to sit around and depend upon or even insist that the government provide them and their innumerable offspring with every facility and accessory to live and multiply. Nothing can contribute so much to health as a good, well-balanced, adequate diet constantly consumed.

Eye Symptoms Generally: Eye symptoms may be purely local and readily identified with the eye or they may be referred to very distant regions strongly suggesting diseases in these localities. The onset of any symptoms calls for the services and best judgment of a physician skilled in diagnosing and evaluating conditions of the eye and associated structures. Disease both local and general must be carefully looked for and the proper measures instituted. Over a hundred diseases affect the eye and proper treatment may lead to the application of nearly all known medical therapeutic procedures, appliances and medications. The question of glasses, while important, should be relegated to the bottom of the list where it rightfully belongs and glasses should be prescribed only after a most careful medical survey.

Increase of Old People: The relative increase in the number of old people in the population introduces new problems and greater responsibility in safeguarding the health of the eyes. Preventive medicine and public health must unravel the mysteries and apply the preventives for the ever increasing degenerative changes and diseases.

Prevention of Blindness: The eye being a highly specialized delicate organ of the body subject to over a hundred diseases and capable of being severely damaged by remote bodily ailments and subject to ravages by inadequate diet, anemias, endocrine disease and a thousand other factors, its proper care is a grave medical problem to be conducted by members of the medical profession. The prevention of blindness is a formidable task of preventive medicine. Education of the public is the greatest and most pressing need. Protective measures must be instituted before birth of the child and in some instances even before marriage and reproduction be permitted. Trained medical social workers must be provided. Sight-saving classes in schools, while laudable, are evidence of failure effectively to prevent blindness.

Hasty School Eye Examinations: Realizing that an eye can see 20/20 and still contain revelations of local or general disease which may lead to blindness or even death, hasty, casual visual testing is to be condemned. Rather, have every child's eyes examined by the family's eye physician before beginning school and at intervals thereafter as directed by the eye physician.

Public Education: The public must be informed and constantly reminded that the eye is a very delicate organ, an inseparable part of the body the same as the heart, brain, lungs, kidneys or any other vital organ; that it is subject to a very great number of diseases; that eye symptoms may signify a need of glasses, but far oftener it means eye disease or general body disease for which glasses can do little or

nothing. Glasses represent only one small part of eye care when the problem is viewed intelligently and scientifically. The eye needs the very best of medical services and attention and its proper care must be harmonized with the entire body mechanism.

Hospitals and Clinics: Not enough hospitals and few clinics in the United States have adequate equipment and facilities with personnel properly to care for eyes. There is not in Louisiana today a single eye clinic properly equipped to do first quality eye work. Some of our so-called best hospitals through ignorance and indifference fail even now to provide the facilities and specially trained personnel necessary to perform safely operations and to conduct other procedures for eye patients. These hospitals should be removed from the accredited list unless they remedy both their attitude and facilities. Next to life itself, human vision is our most cherished possession. Eye clinics should be established in all our new hospital units over the state to care for the indigent only.

Training Eye Physicians and Surgeons: There must be a great increase in the number of first class postgraduate schools for training eye physicians in the United States. These schools must be under the direct supervision of the medical universities and must be so organized as to be thorough, adequate and uniform. These schools must have complete equipment and meet all requirements of a board of review. Candidates who have spent two years in a general hospital or a few years in general practice of medicine after obtaining a bachelor's degree and the degree of doctor of medicine are to be favored. No candidate over 40 years of age should be admitted.

Teaching the Medical Student: Even while taking the regular medical course of four years the student should be taught with greater emphasis than heretofore the great importance the eye should, and will in the future, play in the diagnosis, treatment and prognosis of local and general diseases and in the great body of ill-defined degenerative changes. He must be impressed with the delicacy, complexity and vulnerability of this open book to greater search and knowledge in benefit to his patients. He must get the lasting impression that the eye is intimately a part of the whole body reacting to disease and body ailments the same as any other organ or region of the body.

Nurses, Teachers and Social Workers: The general nurse, public health nurse, industrial nurse, school teacher, social worker and medical social service worker should be more carefully and thoroughly instructed in matters pertaining to the eye. They must realize that the eye is a highly complex organ richly supplied with nerves and blood, subject to many dozens of diseases which may lead to great handicaps, or death. They must realize that eye symptoms call for medical investigations and meticulous search by the eye physician for local and general disease as the first step in proper eye care.

Insurance Companies and Employers: All such persons and agencies must come to realize that a thorough health examination cannot but include a careful external and internal examination of the eyes by a competent eye physician, who alone is competent to diagnose, correlate, treat and prognose the many local and general diseases affecting the eye. An enlarged pupil will so frequently reveal otherwise hidden constitutional disease, early cataracts, cardiovascular disease, renal disease, endocrine and metabolic diseases, systemic toxic states and general degenerative changes, together with many other conditions. Many of us are daily shocked when we look into the fundi of persons occupying positions of grave human and financial responsibility who have that day or recently been pronounced in perfect health by the insurance or employment examiner in all honesty and completeness. The future of medicine will bear out the significance of this paragraph.

Titles and Identifying Names: The public has a moral, legal and ethical, as well as humane right, to know and tell at once by the title whether a man or woman serving the eyes is a doctor of medicine or is one of the non-medical practitioners. The present confusion must be clarified in the interest of human patients and human eyes as well as in the interest of common honesty and progress. The initiative in this matter would be a graceful gesture on

the part of those who have erroneously assumed titles to which their claim cannot justly be defended.

Glasses: It is to be deplored that close to 50 per cent of the glasses sold in this section of the country are second and third grade glasses, most of which are unfit for human use. We must place the control of glasses in the same law as the Pure Food and Drug Act, and provide for the exact, clear and permanent labeling of the quality of all glasses sold to individuals and the buyer must know the quality actually purchased. For falsifying in these matters criminal penalties of great severity must be provided. Facilities for free testing of lens quality must be provided. Most so-called smoked glasses are horribly distorted and provide potential damage to the eyes and contribute to the number of automobile and other serious accidents and deaths annually. All such cheap imperfect glasses must be excluded entirely from any possible sale to public or person. Perfect ground, smoked or tinted glasses made by ethical houses are available at small cost and will become cheaper. Too many people in our country wear glasses of inferior quality. Only first quality glasses should ever be sold.

Commercializing the Eye: Radio, magazine, billboard and showcase exploitation of the human eye has about reached its ultimate climax. It is time that an informed and aroused public regulate or eliminate the commercialization and exploitation of a human organ so vital to life and happiness.

Manufacturers and Distributors of Glasses: There are highly ethical, honest, dependable, cooperative and progressive manufacturers and distributors who are doing all they can to elevate the general standards in merchandising eye glasses. Some of these present constructive pages in our large magazines in a laudable effort better to serve our population. These concerns deserve great praise and increased prosperity. Their leadership must be strengthened and their morale supported. The dishonest dealers and manufacturers who reap fortunes over blind human bodies must be ruthlessly destroyed.

THE EYE AND EAR IN INDUSTRIAL AND SOCIAL LIFE*

DORF BEAN, M. D.
SHREVEPORT

In selecting this subject for presentation, I had hoped to get something different from the usual eye, ear, nose and throat paper of our southern section, and I feel that in a way I have succeeded; however nothing in my discourse is original, everything being taken from past records, statistics and papers. In the preparation of this article I was amazed at the great amount of material available, and I have only attempted to cover briefly and in a more or less general way some of the more vital points as I see them.

THE EYE

In every type of industry, except the blind trade schools, the vision is of vital importance. Practically all companies at the present time have all workers examined before their services are accepted and regular examinations given frequently to see that proper physical standards are maintained. If a prospective worker has poor vision he or she certainly has much more difficulty in securing a position. In every kind of factory or machine works, the individual who does not see normally becomes a serious menace to others in the same working area, and most likely to suffer injury of self, seriously or even fatally.

Stereoscopic vision is so valuable that persons with one eye must be excluded from many kinds of work, such as engravers, goldsmiths, airplane pilots, railroad employees, chauffeurs, and from all military activities, and many other forms of industrial service. Man is the only animal, except monkeys, who has what is called binocular single vision, that is, he can tell not only the direction of an object but fairly accurately its distance by the use of both eyes pointing at the same object at the same time like two range finders. Other animals do not use both eyes on the same object at the same time. The outside limits of vision of man are

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greater than half of the space in which he is placed and his eyes can move accurately, with the greatest precision to any object in any part of his field of vision, and such movements may be supplemented by movements of the head and body. He sees distinctly only that at which he looks directly. Peripheral vision assists him in discovering moving or other objects to which, if he wishes, he may direct his gaze. Poor vision in an eye may save a man from accident caused by some moving object, as a car approaching from the side. Therefore the individual with two eyes, even if the vision of one is poor, is more likely to escape injury than the person with only one eye. One-eyed people are always more likely to meet with accidents than those having two normal eyes.

Every oculist knows that many people consult him and though they have not seen out of one eye for many years or since birth, they did not know this until examined. Often the patient to his astonishment discovers that in one or perhaps in both eyes he or she has only a small percentage of normal vision. If this person with one eye seeing only one-twentieth as much as the other eye should have a slight accident to the bad eye, he or she would be inclined to ascribe the loss of vision to the accident, no matter how trivial it might be. If he or she were a malingerer and had known that the sight was previously defective in one eye, he or she could attribute the loss of vision to the possibly harmless accident. To determine how much a given accident or disease has injured the eyesight, the vision of the eye or eyes before the accident and after must be known. Therefore when any industrial organization or state undertakes to pay for the results of an injury to an eye, they should have a record of the vision of each eye of every assured or employed person. This will insure fairness to both parties. Also the examination will discover many who have defective vision and who are more likely to receive injury, not only to eyes, but to other parts of the body, and possibly loss of limb or life.

Persons who have narrowed or constricted fields of vision would be unable to protect themselves from objects moving towards them outside of the space in which they can see; naturally such an individual should not be employed in certain dangerous vocations, not only for the protection of the individual, but for the employer, and also for the protection of fellow workers or others.

Those whose vocation requires good vision for small signals, colors, such as trainmen, motormen, airplane pilots, army and navy service, are subjected to special quantitative and color tests. It is known that the use to excess of certain drugs, or alcohol and tobacco, may destroy the color perception of small or distant objects without having much effect on general color perception.

The first aid service with trained nurses and doctors is vitally important to any industry to maintain proper physical standards.

In most industries so much depends upon the good vision of the employees that efficiency as well as the prevention of general accidents requires the protection and preservation of eyesight. In certain trades many eyes are injured or destroyed by flying particles, molten metals or corrosive compounds. Most of these accidents can be prevented by correctly fitted protective goggles. It is practically criminal negligence in not using protective glasses that causes the loss of many good eyes, robbing the worker of his usefulness and often throwing him upon his friends or the local government for financial assistance. Education of the workmen and their directors often takes much time and patience before full cooperation can be secured. In certain trades the illumination should not be reduced too much; ordinary glass reduces it nearly 7 per cent, and if isinglass is placed behind the lens the illumination is reduced about 12 per cent. Fortunately at the present time correctly made and tinted protective lenses are easily secured.

THE EAR

In considering the ear in industrial workers, we think in terms of boiler-makers' deafness, airplane deafness, and cloth weavers' deafness. We know the sense of hearing, while perhaps not as vital as vision, is very necessary for any worker to be able to win out in the rapid mechanical productive work of this age, and it be-

comes the serious duty of every industry to prevent occupational deafness by the elimination as far as possible of all excessive or pathology producing noises.

Occupational noises are divisible into two classes: First, those of sudden access and magnitude, such as gun reports, explosions of shells, blasting; these cause deafness by immediate effect on the cells of Corti's canal in the cochlea, with or without middle-ear injury and rupture of drum. Second, there are sounds of prolonged duration, sounds of high pitch and full of overtones, e.g., those to which boiler-makers, coppersmiths and many machinists are subjected, and which produce their effect by stimulation of, and followed by degeneration in Corti's organ, first in the ciliated cells and progressing to the nerve fibers. Such cases of defective hearing are often accompanied by tinnitus and in more advanced cases by vertigo, especially where vibration is present.

The pathologic proofs for these statements are based on experiments on animals. Guinea pigs were used and one or both ears were subjected to continuous notes or tones for varying periods up to 14 days, then the animals were killed and their cochlea examined. Wittmarck was one of the leaders in this pathologic research.

Ritchie Rodgers some years ago investigated boiler-makers' deafness and his conclusions were that loss of hearing for high notes is not the inevitable sequel of noise deafness as had often been thought, but rather that loss of hearing is most marked in that portion of the cochlea corresponding in pitch to the noise to which the individual has been exposed; in other words, the deafness, whether it be most marked for low, medium or high notes, corresponds in pitch to the noises among which the individual works. Later, however, the loss of hearing for high tones, if not previously present, becomes marked, owing to the greater proximity and vulnerability of the basal portion of the cochlear canal. Those supporters of the theory that the basal membrane acts as a resonator cite these experiments on animals and the clinical findings of Ritchie Rodgers as strong evidence in favor of the view that sound is analyzed in the cochlea, in so far as it is analyzed at all.

In occupational deafness of the first variety, sudden atmospheric condensation incident to explosions may bring about rupture of the drum. However, such injuries usually heal rapidly. It is interesting to note that when rupture of the drum does take place, the effects on the internal ear are less and more quickly overcome.

In airplane pilots acute sense of hearing, while an excellent asset, is not considered quite as important as perfect vision. In commercial aviation, the United States Department of Commerce physical requirements on a basis of normal 20/20 whispered voice test, require about one third normal hearing in each ear.

Pilots are subject to three types of deafness: First, deafness due to rupture of ear drum, most often caused by rapid descent, directly due to unequal barometric pressure on either side of the tympanic membrane, and often associated with obstruction of eustachian tube; second, the deafness due to the continuous sharp reiterated crack of the exhaust; this is practically always of a temporary nature, and often lasts several hours after a flight. The third type is that affecting those who test airplane motors, this is usually temporary, as the workmen are only exposed to extreme noises for short intervals every day with frequent changes.

Occupational deafness occurring in civil life affects boiler-makers, blacksmiths, locksmiths, mechanics, engineers, weavers and stokers, and is most often characterized by progressive diminution in the hearing perception accompanied by tinnitus due to excessive irritation of the cochlear branch of the eighth cranial nerve. Gottstein and Kayser found marked impairment of hearing in 50 per cent of smiths and machinists. Holt found marked deafness in 35 per cent of coppersmiths; Marr found that 91 per cent of boiler-makers had impaired hearing. Haferman, in a limited number examined, found no boiler-maker with normal hearing. McKelvie, in thousands of weavers examined, found 24 per cent with some degree of defective hearing.

In industry, defective hearing may be due,

not to noise alone, but to other factors. Certain groups of workmen in chemical plants or other allied branches may become more or less deaf due to certain poisons; this is especially the case in chronic poisoning due to lead, mercury, arsenic, phosphorus, sulphur, coal gas products and aniline dye products.

The prevention of deafness in industry is at present being carried out by the owners of plants and the workmen aided by trained nurses, doctors and technical experts. Industrial safety and efficiency, which touches our whole social structure, is not only a matter of machines, structures, fool proof devices, signs and systems, but in the final analysis is dependent on the education and intelligent, unselfish and willing cooperation of the human factor.

The social problem of the care and prevention of blindness and deafness is one of great magnitude and has many ramifications, and I will very briefly mention some of the factors. A recent national health survey by the U. S. Public Health Service gives the following statistics. Blind in one eye, 34 per 10,0000 persons; partial blindness, 20 per 10,000 persons; blind in both eyes, 9 per 10,000 persons. Deafness: Partial deafness, 119 per 10,000 persons; total deafness 5 per 10,000 persons. In the public schools of the U. S. there are about 30,000,000 children, and the records of nearly 1,000,000 examined in 1935-1936 showed over 5 per cent had poor hearing. Of this number examined, over 22,000 were treated by physicians and 4 per cent were restored to normal hearing, and over 4 per cent were greatly improved. Considering these figures as approximately correct, there are in the U. S. 1,500,000 children with some degree of hearing defect, and, compared with past cases treated, of these 1,500,000 children, 60,000 could have their hearing restored to normal, and an equally large number could have their hearing improved if proper treatment is given.

SUMMARY

Those unfortunate individuals whose sight and hearing are gone are automatically forced out of every day social life, and quite often when a person suddenly becomes blind or deaf, the shock is acute, and complete mental breakdown may be the end result. The blind and hard of hearing societies in every city of any size, with their club-like meetings and their trade schools, are doing splendid work. Every state in the union has some form of schools or institutions for the blind and deaf, and every year millions of dollars are used in making these individuals happy and often self-supporting.

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DISCUSSION

Dr. Paul S. Parrino (Franklin): I would like to ask Dr. Bean a question which I hear quite a bit and that is the effect of quinine on hearing. I am a health worker and this concerns me in the treatment of malaria. I notice that the state institution for the deaf has a circular out on the effect of quinine on deafness.

Dr. John T. Crebbin (Shreveport): This is a most important subject and one which affects each one of us, especially when one recalls that speed demons and careless drivers are causing untold automobile accidents. Every day they not only kill but cause permanent injuries to the eyes, ears and nose. In fact, the entire face is prone to disfigurement, following these accidents.

A law should be passed compelling all mechanics to wear goggles whenever there is fear of injury to the eyes; while following their vocation.

Many of these people may become permanently deaf. The cause may be from the use of drugs, or from occupation. One so affected should be taught to guard against accidents during the working hours and every protection should be given these workers. There is still much opportunity and need in educating the public along safety lines, so as to avoid injury to the hearing apparatus and the eyesight.

A person who is deaf receives but little sympathy from his fellow men, whereas, one who has par-

tially or entirely lost his sight is a worthy object of sympathy. I am of the opinion they should also show sympathy for the unfortunate who is deaf. The hard of hearing may add much to their happiness by learning to read the speakers' lips during conversing.

Every eye and ear accident should receive the care of a specialist, at the time of the injury. If this is impossible the patient should consult a specialist as soon thereafter, as possible. By so doing, much of the sight and hearing may be saved.

Dr. Dorf Bean (In closing): I think it has been definitely proved that quinine does affect the hearing. Dr. Crebbin mentioned some interesting things. Of course, one feature is if a person has become deaf, while there is no means of restoring hearing to normal, this person can take up lip reading. It is wise to take up lip reading before the hearing is entirely gone; it is easier for the individual to connect the slight amount of hearing still possessed with the lip reading. Another thing, there are a few ethical hearing devices on the market which are very good.

THE SYMPTOMS, DIAGNOSIS AND TREATMENT OF CARCINOMA OF THE RECTUM AND SIGMOID COLON*

B. C. GARRETT, M. D.
and
L. L. DAVIDGE, M. D.
SHREVEPORT

RELATIVE FREQUENCY

Five and one half per cent of all cancer deaths occur from cancer of the rectum and sigmoid colon. This is an astounding figure when it is realized that 6 per cent of all cancers occur in the above mentioned sites, and that the diagnosis is one of the easiest of all cancer diagnoses to make. These carcinomas comprise 25 per cent of all carcinomas of the large bowel. Sixty-six per cent of these carcinomas are 5 cm. above or below the rectoperitoneal reflection. The exact location of the growth is often deceiving. It frequently appears to be in the lower rectum when in fact the growth has prolapsed downward from its true site higher up. The location of the growth should be thoroughly understood because of the lymphatic drainage and the fact that obstruction more frequently occurs in the rectosigmoid than in the lower rectum. The lumen of the bowel in the rectosigmoid area is smaller than in the lower rectum, hence the growth encroaches upon it sooner than in larger areas.

Ninety-five per cent of all carcinomas of the rectum are within four inches of the anus and are palpable by digital examination, and yet the early diagnosis is all too infrequently made.

AGE INCIDENCE

There is a total of 69 cases in this series, all being from hospitals in Shreveport, covering the years of 1935, 1936, 1937 and 1938. The oldest patient was 80 and the youngest was 21.

The average age was 52.1 years. The incidence by decades is very interesting.

AGE INCIDENCE

Decade	No. of Cases	Per Cent
Second	4	5.9
Third	9	13.4
Fourth	16	23.9
Fifth	13	19.4
Sixth	21	31.3
Seventh	3	4.7
Eighth	1	1.4

In our small series we have found that the incidence of carcinoma of the rectum and sigmoid is greater in the third decade than it is generally supposed to be. The greatest incidence occurs in the sixth decade of life.

Of the total, 64.1 per cent of these tumors occurred in the rectum, 28.2 per cent in the sigmoid and only 7.7 per cent in the rectosigmoid area. Forty-one, or 61.1 per cent of the patients had surgical measures; 17.9 per cent had radium and deep x-ray therapy and 21 per cent had no treatment. Of the total, 37.3 per cent are still living, 40.2 per cent are dead and 22.5 per cent are unknown.

PATHOLOGY

Carcinomas of the rectum and sigmoid are adenomatous in type. Their microscopic structure varies from almost normal gland formation to formations in which glandular structure is hard to find.

According to their gross appearance they may be classified as: (1) Papillary; (2) polypoid; (3) mucoid; (4) ulcerative; (5) infiltrative; (6) signet ring.

*Presented before the fifty-ninth annual meeting of the Louisiana State Medical Society, May 3, 1938 at New Orleans.

SYMPTOMS

The early manifestations of malignancy of the lower bowel, generally, are likely to be so vague and misleading, that unless we keep the condition always uppermost in our minds we will possibly fail to make the early diagnosis. The earliest of all symptoms is a change in the bowel habits associated with vague abdominal distress, soon followed by the appearance of blood in the stools. Much later pain makes its presence felt, followed by loss of weight, weakness, anemia and a more or less profuse discharge.

In patients of 40 or more who begin to notice some change in their bowel habits, be it constipation, diarrhea or a combination of both, associated with abdominal distress (and it is usually a vague sort of distress), carcinoma should head the list in the differential diagnosis.

Miles, of England, has estimated that it takes six months or longer for the growth to travel one-fourth way around the gut wall. The average patient does not consult the doctor sooner than one year after the onset of the carcinoma and as a consequence the growth is usually half way around the intestine before we see the patient for the first time. In the present series the average length of duration of symptoms was one and one-half years.

The earliest definite symptom is the appearance of blood in the stool. The patient's denial by no means rules out its presence. This at first may be occult blood and it should be our duty to ascertain its presence or absence. There may be a slight abnormal secretion of mucus, perhaps faintly blood-tinged, which may pass unnoticed by the patient for weeks or months. Gross hemorrhage is usually a late finding as is also pain and the resulting train of symptoms which denotes a far-advanced malignancy. Pain, when it is present, is seldom severe and is usually located in the rectum and pelvis, the sacral region, and the lower part of the abdomen.

DIAGNOSIS

The most important aid in the diagnosis of carcinoma of the rectum and sigmoid is to keep the condition in our minds, especially in those patients of 40 or more who come to us with only the vaguest complaints referable to the lower bowel and rectum. The one really valuable procedure in the physical examination is digital exploration and this should be followed by the proctoscope and biopsy.

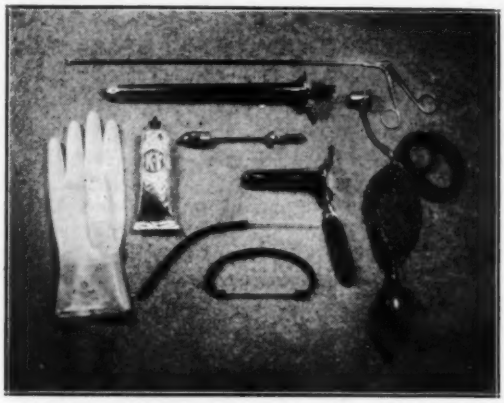

Fig. 1. Simple number of instruments necessary for making proper diagnosis of rectal carcinoma.

As mentioned a few minutes ago, 95 per cent of rectal carcinomas are within four inches of the anus and can be palpated by the examiner's finger. If no abnormality is encountered by the finger with the patient in the usual position he should be requested to strain downward. If this yields negative results the patient should then assume the squatting position and strain down. If there is a carcinoma in the rectum it can be felt by this last maneuver. In females the growth often can be palpated through the vagina when it is not possible to do so otherwise.

The digital exploration should be followed by passage of the proctoscope so the type, extent and site of the growth can be seen.

During proctoscopy, sections of the tissue should be taken for microscopic examination. It is always advisable to take sections from several areas of the growth. This is a harmless procedure and it is far better to have several sections reported non-malignant than it is to have only one negative report.

It is well to remember that 20 per cent to 25 per cent of all patients with carcinoma of the rectum and rectosigmoid have had previous operations for hemorrhoids.

Roentgen ray examination with barium is a valuable and frequently used aid in the diagno-

sis of cancer of the rectum and sigmoid. To be of real value the x-ray examination should be done carefully and competently. All too often the barium is closely watched during its passage through the stomach and duodenum and then not so carefully watched during its descent and elimination and the examination is reported as negative as no filling defect was found. The real state of affairs would have been determined had the barium been carefully watched to its final exit. Therefore the barium enema should be used freely in these suspected cases. Some of our x-ray men use the injection of air into the rectum and colon after evacuation of the barium to show a "mucosa relief picture" which will sometimes reveal filling defects that the barium enema did not show. Early carcinoma of rectum and rectosigmoid does not always show up on x-ray.

DIFFERENTIAL DIAGNOSIS

In the differential diagnosis of carcinoma of the rectum and sigmoid the following conditions must be considered: Chronic hemorrhoidal disease; chronic fistula and fissure; multiple polyposis; benign adenoma; granuloma due to chronic E. histolytica infection; granuloma due to chronic ulcerative colitis; diverticulitis; hyperplastic tuberculosis; lymphogranuloma inguinale; syphilitic stricture.

The relationship of rectal polyps to carcinoma is still a very moot question. Many writers think that polyps always undergo malignant changes eventually and offer very convincing arguments to prove this point. Certainly it is very true that the borderline between benign polyps and malignancy is not clear-cut, but the pathologists will have to settle this question.

There should be no real confusion in the differential diagnosis if there is careful history taking and the careful physical examination including digital exploration, proctoscopy and biopsy with several pieces of tissue being excised and studied under the microscope.

MODES OF EXTENSION

Carcinoma of the rectum and sigmoid extends by three different channels: (1) Direct extension, through continuity of tissue; (2) extension through the venous system; (3) extension through the lymphatic system.

Growth by continuity of tissue occurs in a circular manner in the mucosa and submucosa of the rectum and sigmoid. The amount of circular extension is commensurate with the duration of the disease. Infiltration radially into the muscular tunics occurs secondarily and moderate fixation is usually established by the time that one-half of the circumference of the rectum or sigmoid is involved. In very advanced stages the carcinoma penetrates structures beyond the actual wall of the rectum of sigmoid.

Extension by the venous route is a very rare occurrence. That it does occur is witnessed by the finding of carcinomatous nodules in the liver when the primary carcinoma in the rectum or sigmoid is apparently not very far advanced.

There are two groups of lymphatics draining the rectum and sigmoid, the extramural and intramural, the latter being relatively unimportant. The extramural group collects on the surface of the rectum and sigmoid and forms the anorectal glands. From this group of glands there are three efferent lymph routes:

1. The downward: terminates in the internal iliac group of glands, having traversed the ischiorectal fossa and Alcock's canal.

2. The lateral: also terminates in the internal iliac group of glands, but traverses the area between the levator ani muscles and the rectovesical fascia.

3. The upward: terminates in a group of glands at the bifurcation of the left common iliac artery, having traversed the rectorectal lymph glands and the subperitoneal area at the line of attachment of the pelvic mesocolon. The tissues included in this area of spread are important: (a) Pelvic peritoneum; (b) pelvic mesocolon; (c) paracolic lymph glands.

PALLIATIVE TREATMENT

The generally accepted opinion is that deep x-ray therapy and radium are valueless in the curative treatment of carcinoma of the rectum and sigmoid. Lockhart-Mummery says that x-rays and radium probably have never cured a case of carcinoma of the rectum or sigmoid. It cannot be denied though that deep x-ray and

radium have a very definite place in the palliative treatment of these cases.

If the patient comes into the hospital with an intestinal obstruction, immediate colostomy should then be done, and we would advise a colostomy only and not an abdominal incision for exploration because this will increase the death rate considerably.

Most of these patients abhor the idea of a permanent colostomy, but evidence that the general public is beginning to accept this procedure is being seen. The usual patient will agree more quickly to a resection and an end-to-end anastomosis and will refuse a colostomy until it is too late to hope for a cure. It has been said that a colostomy opening can be controlled by diet and daily routine, but this is definitely not our impression.

OPERABILITY OF CASES

Factors which determine the operability of a patient with carcinoma of the rectum or sigmoid are: (1) Small, local growth; (2) no fixation to adjacent structures; (3) no involvement of the regional lymph glands.

The presence of these factors is not easy to determine, and sometimes we have to do a laparotomy to determine whether a case is operable. Usually a carcinoma in a patient under 30 years of age is inoperable, because the growth promptly recurs and with greater virulence.

Metastasis to distant parts, that is, the peritoneum and liver, contraindicate any but palliative procedures. Diffuse lymphatic involvement in areas adjacent to the neoplasm does not always indicate inoperability. The glandular involvement may be inflammatory rather than carcinomatous and complete removal of the involved area is frequently possible.

Fixation of the growth may or may not indicate inoperability, because sometimes the growth including the fixed adjacent parts can be removed in toto. In deciding the question of operability it must be kept in mind that metastasis occurs late rather than early.

Occasionally an inoperable carcinoma will become operable. A colostomy may be done which will stop the fecal current from passing over the affected areas, allowing it to rest. Through and through irrigation may then be done, followed by radium and deep x-ray therapy.

PRELIMINARY PREPARATION

Surgical measures for the treatment of carcinoma of the rectum and sigmoid are formidable procedures, and the patient should have the most careful preoperative preparation to prevent infection and combat shock. This period of preparation should be carried out over a period of from four days to one week. It consists of: (1) High caloric, low residue diet (including candies, fats and large amounts of fruit juices); (2) large amounts of fluids (intravenous infusions of glucose and saline solutions); (3) blood replacement by transfusions if necessary; (4) decompression (one ounce of epsom salts in water over a four hour period each morning for several days); (5) cleansing enemas each day; (6) absolute removal of all barium (a flat plate should be taken the day before operation followed by proctoscopic examination to be sure all barium is removed and the rectum and colon are clean); (7) the routine use of an intraperitoneal vaccine of streptococci and colon bacilli is questionable.

SURGICAL PROCEDURES

It is hard to describe the feel of cancer of the rectum or rectosigmoid. Someone has said it seems very much like cartilage, and this is probably so; however, I have often compared it to the consistency of a new Irish potato. To diagnose, we need only our finger, a glove, a knowledge of the disease and a good history for 95 per cent of the cases. A proctoscope and microscope should enable us to diagnose practically 100 per cent. Amebic infection should always be ruled out as sometimes both are present.

Lisfranc first advocated resection of the rectum over 100 years ago (1830). Prior to that time cauterization and curettement had been carried out. Some 50 or more years later Marhand and others advocated perineal resection.

Surgery of today has a tendency toward perineal excision or posterior resection preceded by a permanent colostomy or an abdomino-

perineal resection which is also preceded by permanent colostomy and usually exploratory laparotomy at the time of the colostomy. Exploratory laparotomy is usually done through a lower midline incision or a left rectus incision and colostomy is done in the left iliac fossa.

The narrowing of the lumen of the bowel in the rectosigmoid area was demonstrated a number of years ago by dissection and proctoscopic examination. The lumen in this area has often been spoken of as being too high to attack from below and too low to be attacked from above, and the upper part of the rectum is fixed and has no mesentery. These facts would point out that combined radical surgery would be the treatment of choice of tumors in this location.

The abdominoperineal procedure is certainly the most radical and carries the highest postoperative mortality, which is from 15 per cent to 25 per cent when done by a most skilled surgeon, whereas in posterior resection the mortality is much less and is reported by some as from 4 per cent to 8 per cent. We consider the posterior resection the method of choice when being done by the average surgeon who sees comparatively few of these cases.

The question arises about metastasis: Would more patients survive the abdominoperineal operation than the ones surviving the posterior resection? It all depends on the involvement of the lymph nodes or metastasis to other parts of the body. If there is metastasis, surgery nor anything else will give them any permanent relief. Metastasis, grade of cancer and the general condition of the patient will all have an important bearing on the patient's recovery.

Recently Lockhart-Mummery has reported more than 200 cases done by posterior resection with a very low mortality rate. In his opinion the carcinomas that have progressed beyond the intestinal wall and involved the lymph nodes have a poor prognosis, and those in which only the intestinal wall is involved, have a good prognosis.

The abdominoperineal operation should be done, if at all, on patients who are under 60 years of age and in good physical condition. Miles is an advocate of the one stage abdominoperineal operation, but in the hands of the ordinary man I think that the death rate would certainly be high in the average run of cases.

Rankin advocates the two stage abdominoperineal operation. He first opens the abdomen by lower midline incision, doing an abdominal survey to see if there is any metastasis. Then he divides the gut well above the growth, purse-strings the distal end and leaves it free within the abdominal cavity and brings the proximal end out through the left flank making a permanent colostomy. After four or six weeks he goes back and does the posterior resection. After the rectum is resected up to the peritoneal fold it is covered over with a rubber glove and the peritoneum closed from behind. Then the patient is turned over on his back, the abdomen opened and the operation finished from above. This operation has proved very successful in Rankin's hands, but there are few of us as capable as he in performing this operation.

Lahey's operation is done in somewhat the same manner except he brings the distal end of the gut out the lower end of his midline abdominal incision so as to be able to irrigate the distal end of the gut from above downward and when he does the second stage operation, it is done from above downward.

There are various other operations as described by Coffee and others, but Lahey's, Rankin's and the posterior resection, or Kraske's procedure, are the methods of choice. Rankin's operation and also the Lahey operation would certainly create more pitfalls and difficulties for the average surgeon than does the ordinary posterior resection.

In the cases of carcinoma of the rectum and rectosigmoid we have managed, the Kraske procedure has been employed, except in a few cases that were high enough above the peritoneal fold to do a segmental resection with an end-to-end anastomosis, with preservation of the rectum. We might mention that these are the happiest patients we have attended.

The posterior resection is preceded by a left abdominal incision, so as to allow an exploration of the abdomen for metastasis, and a loop of the descending colon is brought out above the growth to establish the permanent colostomy.

If the general condition of the patient is not good and you do not want to handle the gut or put your hands into the abdomen for fear of scattering the infection, or disturbing the tumor, you do not make this left abdominal incision. A smaller incision is made, a loop of the gut is brought out and a glass tube is slipped underneath the gut through the mesentery, in an area which is comparatively free from blood vessels. A rubber tube is placed over each end of the glass so that it will not slip out of place. Very little suturing will be required around this loop of gut, usually one stitch on each end of the small incision. The incision should be large enough so as not to interfere with the circulation of the loop of gut that is brought on the outside. The exposed gut is left intact for 48 to 60 hours, if the patient's condition will permit, and is then opened by a cautery. If gas or a bowel movement does not begin to escape immediately the proximal end should be irrigated with mineral oil or warm water every three or four hours to stimulate peristalsis. The colostomy is covered with vaseline gauze which is changed as often as necessary. After five to seven days the gut is severed immediately above the original intestinal incision. If hemorrhage is encountered it may be controlled very nicely by means of a cautery. The distal segment should be irrigated from above through the rectum twice daily. We have been very fortunate not to have the proximal end of the gut prolapse except in one case and that was partially controlled by the cautery.

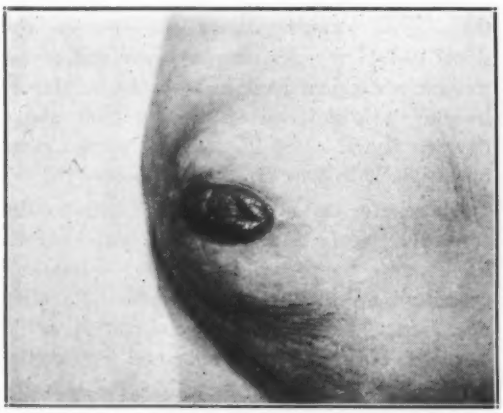

Fig. 2. Type of colostomy done in first stage of Kraske operation.

By this time the patient is on a full diet and is allowed to be up and about in a rolling chair. Everything is done to build up the general health, to restore strength as soon as possible.

In two to four weeks the patient is taken back to the operating room and under spinal or general anesthesia the posterior resection is performed. An eliptical incision is made, which extends from the upper part of the sacrum down to and surrounding the rectum. The coccyx and often a small portion of the sacrum are then removed. At this time the superior hemorrhoidal artery should be ligated and the rectum closed tightly with at least two layers of heavy linen.

Fig. 3. Section showing area for incision in second stage (posterior resection) of Kraske operation. Note small draining sinus, almost healed.

The gut with the ischiorectal fat is dissected up to the rectoperitoneal reflection. If the growth is above this reflection the peritoneum should be opened going as high as possible above the growth before severing the gut with a cautery. Then, this proximal stump, or fistulous tract, should have a purse-string suture and be anchored to the peritoneum when it is closed. If this is done the healing should be comparatively rapid and without a sinus. Sometimes these sinuses are very annoying to the patient. However, they often heal without sinus formation. Hemorrhage should be controlled in the posterior wound and the wound closed, leaving vaseline packs in the lower part of it to facili-

tate the drainage. If the patient's condition is not good, immediate blood transfusion should be given and repeated as often as necessary. Fluids should be pushed by infusion, hypodermoclysis and, as soon as the patient can tolerate it, by mouth.

Much has been said about educating the patient to control the colostomy by the formation of new habits and dietary management. This may be possible, but we have yet to see a patient who could control a permanent colostomy without some kind of a receptacle on the band to take care of the bowel movements. We are sure that the peoples' minds are not as poisoned today as they have been in the past in regard to colostomy, but they are not all thoroughly sold on the idea yet. This being true, we have attempted and gotten by with a few cases of segmental resection with an end-to-end anastomosis. Horsley has reported some good work along this same line.

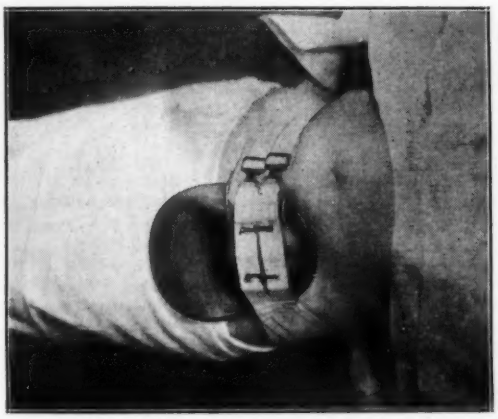

Fig. 4. Type of colostomy pouch used with colostomy.

POSTOPERATIVE CARE

Postoperative complications of this procedure are about the same as for any other abdominal operation, the most common being shock, hemorrhage, peritonitis, obstruction and occasionally pneumonia. Peritonitis is the one that causes the greatest fear and it is responsible for most of the postoperative deaths. Its occurrence can be lowered by the cooperation of the patient and everyone else interested in the case, both during the operation and afterwards.

SUMMARY

The efficiency or the success of any operation depends upon the mortality, how happy you leave the patient when the operation is over, and how long he will live.

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SUMMARY CF CASES

SEX	AGE	DURATION OF SYMPTOMS	LOCATION OF CANCER	TREATMENT	FOLLOW UP
			HOSPITAL 1		
F	59	2 years	Rectum	One stage removal; radium	L and w 7 yr.
F	35	2½ years	Rectum	Resection, end-to-end	L and w 3½ yr.
F	40	9 months	Rectum	Colos.; post. resection	L and W 4 yr.
F	40	9 months	Sigmoid	Colos.; post. resection	L and w 6 mo.
M	60	1 year	Sigmoid	Colos.; post. resection	Died—peritonitis
F	68	2½ years	Sigmoid	None	L 5 months
M	47	3 years	Rectum	Resection, end-to-end	L and w 3 yr.
M	35	?	Sigmoid	Colos.; post. resection	L and w 2½ yr.
M	62	?	Rectum	Obstruction; colostomy	Died
M	65	?	Sigmoid	Obstruction; no treatment	Died
			HOSPITAL 2		
F	53	1 year	Sigmoid	Deep x-ray	Died
F	29	?	Rectum	Exploratory	Died
F	67	?	Rectum	Deep x-ray	L and w 5 yr.
M	62	1 year	Sigmoid	?	Died
F	46	?	Sigmoid	Deep x-ray	Died
M	79	3 weeks	Sigmoid	Exploratory	Died
F	21	3 years	Rectum	Exploratory	Died
M	49	1 year	Rectum	Deep x-ray	L and w 1 yr.
M	59	6 weeks	Sigmoid	Exploratory	Died
F	68	2½ years	Rectosigmoid	None	L 1 month
			HOSPITAL 3		
M	65	2 years	Rectum	Radium	?
F	44	2 months	Rectum	Colostomy; radium	L 1 yr. (pneumonia)
M	63	6 months	Rectum	Refused	?
F	68	2 years	Rectum	Inoperable; radium	?
F	60	2 years	Rectum	Radium	L and w
F	72	8 years	Rectum	Deep x-ray; radium	L and w
F	60	?	Rectum	Colostomy; radium	L and w
M	67	6 months	Rectum	Radium	L and w 3 yr.
F	54	1 year	Rectum	Colostomy	Died
F	67	2 years	Rectum	Radium	D 3 mo. (insanity)
			HOSPITAL 4		
M	65	8 months	Sigmoid	Colostomy	Died
M	63	2 years	Sigmoid	Colostomy	Died (peritonitis)
F	55	3 years	Rectum	Colostomy	Died
M	45	3 years	Rectum	Colostomy	Died
F	76	2 weeks	Sigmoid	Colostomy	Died
M	52	4 years	Sigmoid	Colos.; post. resection	Lived 2½ yr.
F	62	1 year	Sigmoid	Colostomy	Died
M	63	8 months	Sigmoid	Colostomy	Died (peritonitis)
M	47	6 months	Rectum	Resection, end-to-end	L and w 2 yr.
			HOSPITAL 5		
	62		Sigmoid	Refused	?
	29		Rectum	Modified Rankin (1)	Died
	47		Rectum	Refused	L and w
	34		Rectum	Laparotomy	Died
	30		Rectum	X-ray	Died
	60		Rectum	X-ray; radium; op.	Died
	53		Rectum	Refused	L and w
	36		Sigmoid	Laparotomy	?
	53		Rectum	None	Died
	52		Rectum	Colostomy; radium	?
	26		Rectum	Radium	Died
	62		Rectum	Refused	L and w
	80		Rectum	Colostomy	?
	32		Rectum	Colostomy	Died
	46		Rectum	Laparotomy	?
	49		Sigmoid	None	?
	35		Rectum	Laparotomy	?
	44		Rectum	Laparotomy	?
	60		Rectum	Laparotomy	?
	42		Rectum	Colostomy; x-ray	?
	59		Rectum	Laparotomy	L and w
	42		Rectum	Colos.; post. resec.	L and w
	63		Sigmoid	None	L and w
	59		Rectum	None	Died
	45		Sigmoid	Ileostomy	Died
	53		Rectosigmoid	Colostomy	Died
	34		Rectum	None	L
	39		Rectum	None	L
	56		Sigmoid	Laparotomy	L

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DISCUSSION

Dr. John A. Hendrick (Shreveport): Dr. Garrett and Dr. Davidge have covered the subject of carcinoma of the rectum and rectosigmoid from practically all of its angles. All I wish to do is to try to emphasize some of the points that Dr. Garrett has already made.

In fact, the real problem that we have in dealing with malignant neoplasm of the distal colon is its early recognition. If these cases are recognized early, the operative procedures which have been so well worked out by Miles, Rankin, Thompson, Lahey and many others, when properly applied, give a low operative mortality and good permanent results.

The unfortunate and difficult situation we meet in dealing with malignant conditions of the lower colon is the fact that it has no sensory nerve supply and therefore is a silent area, and does not give any symptoms early. Only after the neoplasm has become so extensive that it interferes with the normal function do we get any symptoms at all, and even then they are so indefinite that the patient does not think them of enough importance to go to his physician; and when he does, we, as doctors, do not attach enough importance to the symptoms complained of to make us do a thorough proctoscopic and rectal examination.

If we are to increase the operative per cent of patients suffering from neoplasm of the lower colon, we must constantly bear in mind the fact that one half of all malignancies are located in the gastrointestinal tract, and nearly one third of these are in the lower colon. If these cases can be recognized early enough, operative procedures that have been well worked out, properly employed, give a low operative mortality and a fairly normally functioning bowel.

There have been admitted to the Highland Sanitarium in the past four years nine patients with cancer of the lower colon and rectum. Two of these patients had a general peritonitis when they came in, five were far advanced cases. On one, we did a graded resection after the method of Rankin, and on the other, a low rectal cancer, we did a Harrison-Cripps operation. The Harrison-Cripps operation is really worth while and gives good results in this type of case. In this case, one year and a half after the operation, the patient is in good health and has a satisfactory functioning bowel at the present time.

When we review the symptoms of early, cancer of the lower colon, we find they are so vague and indefinite that they are rarely suspected. This is why it is very important that all patients complaining of any gastrointestinal symptoms should have a thorough rectal and proctoscopic examination. In other words, we must train ourselves to suspect malignant neoplasm in the rectum in all patients who come to see us within the cancer age as we have heretofore suspected malignancies in the breasts and cervix of women. If these cases are recognized early, we can in a great per cent of the cases do a restorative operation and save the patient from having a permanent colostomy done, which is a life saver and is borne very well by the patient; but certainly they are not as happy over their situation as they would be had the normal function of the bowel been restored.

We should consistently keep in mind that nearly all rectal cancers are within reach of the examining finger and all are within reach of the proctoscope, and further that 90 per cent of all cancers of the rectum are of low grade. We should remember what Dr. Osler said, "Neglect to put your finger in the rectum and, sooner or later, you put your foot in it."

Dr. A. P. Crain (Shreveport): The discussions of cancer are so generalized that we know just about what they are, which comes to this point—that the speaker and the discussors have brought out, that we are too prone to allow these patients to come to our office and leave without proper examination. I know you have had patients come to you with the complaint that they have bleeding piles, itching sensation in the rectum, fullness in the rectum and you prescribe a little Upjohn ointment and allow the patient to go away, possibly to another doctor who is more careful and alert than you have been and you lose the patient and

respect of people who know anything about the case.

Cancer of the rectum is one of the most common types of cancer. The early diagnosis, biopsies, and clinical findings in order to determine whether there is a cancer and if there is, any radical form of operation that you may see fit should be performed, going after the glands and getting everything possible well above the site of the cancer. I have only had a few patients with cancers of the sigmoid, but a colostomy has been done and kept wide open the whole time of the patient's convalescence until I was sure that the sigmoid joint had held. The follow-up of these cases often times is not what you desire.

Dr. Alton Ochsner (New Orleans): Dr. Garrett, Dr. Hendrick, and Dr. Crane have emphasized the importance of early recognition of carcinoma of the rectum. There are several considerations of surgical significance which I should like to stress. These concern the preoperative preparation of a patient. It is particularly desirable to administer fluids to these patients, because they are usually dehydrated. We have also observed recently that these patients have a very definite vitamin C deficiency. This occurs characteristically in any type of chronic infection extending over long periods of time. For this reason these patients are given large quantities of vitamin C immediately before the operation.

Some of these patients are inoperable because of a marked fixation of the neoplasm which is frequently due to the associated infection. In many cases by short-circuiting the fecal stream this infection subsides to such an extent that resection becomes possible at a subsequent stage. Whereas this can be partially accomplished by the customary Paul procedure which consists of bringing the two loops of the colostomy to the skin as separate openings, almost invariably there occurs some soiling into the distal segment. The recent procedure described by Devine* of producing a "defunctioned" distal segment undoubtedly achieves this most successfully.

My experience as regards the ability of these patients to be comfortable differs from that of Dr. Garrett. Whereas some inconvenience may be experienced at first in the proper care of the colostomy, they are able usually to have automatic control of the colostomy. This is accomplished by taking an enema once a day or once every other day and thus completely evacuating the colon. In this manner it is necessary to wear only a small piece of vaseline gauze to prevent irritation of the mucosa.

Dr. C. P. Rutledge (Shreveport): Dr. Garrett has asked me, as a radiologist, to make a few remarks concerning radiation treatment of these conditions. Of course there is no radiologic cure for carcinoma of the rectum. However, in some of those cases with fixation, large tumor masses, in some of the radiosensitive tumors, which are few and far between, radiology is of some service. Some of these cases are made operable by the aid of radiation treatment. I have had no experience with radium treatment in this condition. I have treated some few with roentgentherapy. Roentgentherapy is of value in those cases where patients are suffering quite a bit of pain because it does act as an analgesic and makes the patients more comfortable. I have had one case of carcinoma of the rectum where the growth was protruding from the rectum and the patient refused operation and received extensive radiation treatment over a long period of time. This patient was kept comfortable for many years, was finally operated on and I believe is still living.

Dr. J. D. Rives (New Orleans): Dr. Garrett and Dr. Davidge have covered their subject as thoroughly as the limits of time permitted, but a few additional points might be further stressed.

The first consideration is the question of diagnosis. It is beyond dispute that the chief cause of the high mortality in carcinoma of the rectum or sigmoid is late diagnosis. Upon that we are agreed, I think. It can be stated categorically that any patient who exhibits symptoms referable to the lower bowel should have a digital examination. Until those studies have been made, no physician has a right to declare non-malignant any condition which produces symptoms referable to the lower bowel. I also want to emphasize another point in this connection, of which most physicians though not all physicians are fully aware, that the ordinary gastrointestinal x-ray study is practically useless as far as visualizing the colon is concerned. That can be done only by a barium enema.

The second point I wish to discuss is the cause of the high surgical mortality which follows procedures upon the colon. That mortality is not due to the fact that the disease has spread beyond the range of surgical removal. It is due chiefly to sepsis, not sepsis which is present at operation, but sepsis which follows the operative procedure. The proper preoperative preparation of the patient will reduce that mortality enormously.

The operative preparation falls into two parts. The first deals with the maintenance of an adequate fluid balance by the systematic supply of fluids, and particularly by the use of blood transfusion. The administration of fluids by various routes is essential, but there is no real substitute for the addition of blood, and transfusion should always be part of the preparation for surgery.

The second phase of preoperative preparation is a systematic endeavor to empty the colon and to keep it empty for several days preceding the operative procedure. Surgeons who practise that plan

*Devine, Sir Hugh: Operations on a defunctioned distal colon, Surg., 3:165, 1938.

are agreeably surprised by the reduction in their surgical mortality. Rankin's experience is significant. You will remember that some years ago he reported a striking reduction in operative procedures on the large bowel by the use of preoperative injections of vaccines into the peritoneal cavity. He now believes that those injections had little if anything to do with his reduced mortality, but that the chief factor was the preoperative emptying of the bowel.

It is astonishing how nearly free from solid content the large bowel can be made, and how much more satisfactory is the convalescence of the patient when this state has been achieved. A non-residue, high-caloric diet, repeated colonic irrigations and the systematic administration of saline laxatives will empty the large bowel and keep it empty. Another plan, devised by Devine and discussed by Dr. Ochsner, has attained wide popularity, and it should be used even more extensively than it has been. If it is consistently employed, there is far less danger of peritonitis and sepsis, which are the bane of surgeons who do large bowel surgery. If peritonitis and sepsis can be controlled, the results of such surgery will be enormously improved.

Dr. B. C. Garrett (In conclusion): I am very much interested in Dr. Ochsner's statement concerning the new type of operation performed and hope I will have the occasion to see or do one.

Unfortunately these cases, as you know, are pushed from one fellow to another and the average doctor thinks it is just a good case to pass on and get rid of it. I would like to learn more about these cases and I have learned much from these discussions.

NEOPLASIA OF TESTES*

FRANK L. LORIA, M. D.
NEW ORLEANS

There is perhaps no other group of neoplasia in the entire body more difficult to understand than those which are found in the testes. Most of this difficulty has resulted from an inability to understand the pathogenesis of these tumors, which in turn has made an acceptable classification practically impossible. There are probably no two pathologists who use the same classification when considering testicular tumors; and many of them "are frank enough to admit that at present some of these tumors cannot be classified."[1]

*Presented before the Staff of Hotel Dieu at the regular monthly meeting on April 18, 1938.

Despite these facts, however, recent developments have been of such significance as to indicate a definite transitional state of the subject.[1] In 1929 Zondek[2] discovered that the urine of some patients suffering from testicular tumors gave a biologic result very similar to that which he had observed in using the urine of pregnant women. His report in March 1930 was followed by investigations and reports[2] along the same lines by other investigators. The result has been a better understanding of these tumors from practically every viewpoint. The fact that certain of these tumors cause the excretion of a specific gonadotropic hormone in the urine, similar to that excreted in the urine of pregnant women, has been found to be of great practical value from the points of view of diagnosis, prognosis and treatment.

INCIDENCE

Among many clinicians, for reasons which I have been unable to understand, tumors of the testes, especially teratomata, are thought to be relatively common. Testicular tumors, however, are rare, and according to Hinman,[1] no one person has had an opportunity to study a large series. In this connection it is interesting to note that in Hotel Dieu among 65,744 admissions during the past decade—1928 to 1937 inclusive—there have been admitted only six testicular tumors, all of which were diagnosed pathologically as teratoma of the embryomatous type. The experience of Touro Infirmary is very similar. During the same period of time at the latter institution among 90,233 admissions there were seven testicular tumors. Among this group there were five teratomata and two seminomata. From this it is quite evident that the experience of New Orleans, surgeons more or less parallels that of surgeons elsewhere.

ETIOLOGY

As regards the etiology of testicular tumors nothing is known. Most of the theories advanced for neoplasia elsewhere have likewise been advanced for tumors of the testes. Just as is the case with other tumors, testicular neoplasia have been reported from birth to very old age. The period of greatest frequency, however, is from twenty to forty years, 80 per cent being observed during these two decades.

According to Gurlt, Corner, and Slye[1] the relative frequency of testicular tumors to malignant new growths of all kinds is about 0.57 per cent. The right side—as in the present group of thirteen cases—is somewhat more frequently involved than the left side (123 to 99 times.)[1] Twenty-four cases[1] of bilateral involvement have been reported, most of which occurred in cryptorchids. According to Hinman, the relative frequency of tumor in undescended testes is difficult to estimate. Eccles, Coley and others show it to be about 0.17 per cent. Among 728 testicular tumors, 82 or 11.2 per cent occurred in undescended testes.[1] "On the other hand, among 3646 cases of undescended testes variously collected, there were only eight instances of malignancy," and "up to October 1934, a total of 156 tumors occurring in undescended testicles had been reported." After careful consideration of various statistical data. Hinman concludes that teratomata have a higher incidence in cryptorchids than in the normally placed gland.

PATHOLOGY

It is not my intention to discuss the pathology of testicular tumors. From a clinical standpoint however, this phase of the subject cannot but attract our attention. Hinman says that there are three main points of origin for tumors of the testes. They can arise from totipotent cells which may be primordial germ cells or differentiated somatic cells, from a fetal remnant or isolated blastomere, or from an adult tissue cell of the testes. This author further states that if it arises from the first, the growth would be embryonal, a mixed tumor and malignant; if from the second, a congenital and benign dermoid or an adult teratoma which may show malignant changes; and, if from the third, a type of tumor characteristic of the cell from which it originated, which might be connective tissue or epithelium, or benign or malignant. According to this it is quite possible to have teratomata develop from the totipotent cells or from the fetal remnant or isolated blastomere. In the former the type is usually embryomatous and very malignant. The latter usually represents the adult type of teratoma which is usually benign. Seminomata arise from the seminiferous tubules and are histopathologically carcinomata.

The question of genesis has lately commanded more attention, because of all the testicular tumors it is only some of the embryomata, arising from the totipotent cell, which give rise to the gonadotropic hormone.[2] However, "most pathologists favor the origin of these tumors from primitive sexual cells whose normal development into the spermatogonia has been suppressed."[1]

In the present group of thirteen cases, ten were classified by the pathologists as embryomas, which according to Hinman are very malignant, one as an adult teratoma and two as seminomata or carcinomata.

SYMPTOMS

The first thing usually observed is a painless enlargement of the testis. Occasionally a blow or some other trauma may be the first thing to direct one's attention to the changes present.[1] The initial increase in size is frequently followed by a period of quiescence; and this is followed by a secondary increase in size that usually alarms the patient and makes him seek medical advice.

The onset of these tumors is ordinarily insidious and several periods of latency may be observed. However, as a rule their growth is rapid and most of them are present less than one year when first seen. Tumors which have existed for several years have usually grown more slowly, and are either adult teratomata or occasionally seminomata.

The diagnosis is made clinically from the history, and to a lesser extent from the physical findings. The court of last resort is of course the pathologist. A strongly positive Aschheim-Zondek test is almost invariably definite evidence of an embryomatous teratoma. However, a negative test should not preclude orchidectomy,[1] as this is no definite proof that the enlargement is not a tumor, as the new growth may be an adult teratoma or a seminoma; and further, if it is a teratoma of the embryomatous type irradiation will have modified the test temporarily—for the latter type of testicular neoplasia are very sensitive to radiation therapy.[1]

Although the spermatic cord may be thickened in these tumors, this is a late finding, just as is enlargement of the inguinal lymph nodes, which follows invasion of the scrotum by the tumor. Despite the clear cut history and definite findings in teratomata it is often necessary to differentiate them from testicular gummata, hematoceles, tuberculosis, and epididymo-orchitis.

PROGNOSIS

The diagnosis of testicular tumor has always carried with it grave significance. This has been so mainly because by far the greatest number of them are malignant.[3] It has been estimated that anywhere from 90 to 95 per cent of testicular neoplasia are teratomata of the embryonal type. Many of these cause the excretion of the gonadotropic hormone in the urine and for that reason much can be learned about them. If a complete removal has been done, the hormone will shortly disappear from the urine. On the other hand an incomplete removal, as well as metastases, can be determined by the presence of the hormone in the urine. The disappearance of the hormone after complete extirpation of the tumor is practically complete at about the end of the second week.[2] Recurrence or the existence of metastases can be determined by the presence of the hormone in the urine. The test then serves as an indication of further activity on the part of the tumor. The more metastases and the more extensive the growth, the larger the amount of hormone excreted. Irradiation treatment causes either a marked diminution or complete disappearance of the hormone from the urine.[2]

Only about 5 per cent of all testicular tumors are of the adult teratomatous type. These comprise the dermoid cysts and organized embryomata with fully differentiated cells.[1] Although these tumors are benign they may undergo malignant changes with a microscopic picture of carcinoma. This type does not usually cause the excretion of a gonadotropic hormone at any time.

Thus the presence of the gonadotropic hormone in the urine is of great importance from the points of view of diagnosis, prognosis and treatment. As a matter of fact, the prognosis might now be said to depend almost entirely upon the presence or absence of this hormone in the urine and especially its quantity.[2] The warning must be given, however, that while a positive test places a given testicular tumor in the category of the embryomata, a negative such test does not carry the same definite significance.[1]

METASTASES

From the clinical standpoint all malignant types of testicular neoplasia behave the same way. Metastasis is first to the regional lymph nodes.[4] In neoplasia of the testes, metatasis is first to the iliac nodes and this is usually relatively early,[5] then to the pre-aortic nodes; and when the supraclavicular nodes are involved, it is very certain that metastasis is generalized, and that the lungs, liver, and spleen are foci of these metastases. The inguinal lymph nodes are never involved unless there has been invasion of the scrotum by the growth.[1] Metastasis to bone does not usually occur. The use of the test to determine the presence of the gonadotropic hormone in the urine permits the surgeon to detect metastases much more early than formerly, when it became necessary to wait for large palpable masses in the abdomen to determine infiltration of the abdominal lymph nodes.

TREATMENT

The treatment of testicular tumors is principally by orchidectomy, the vas deferens being clamped high and cut across with the cautery.[1] In some cases the Chevassu radical operation,[4] which comprises the complete removal of the regional lymph nodes, has to be done. When this operation should be used, however, is still a debated question. Hinman says that "the radical operation for teratoma testis occupies an anomalous position in surgery. It is regarded by the majority as useless, and those few who see some virtue in it are uncertain when to use it." One thing is certain, however, and that is, if this radical proceduce is to be done at all it should be done early.

Of great importance in the present day treatment of teratoma testis is the deep roentgen ray machine. It has been pretty well established that some of these tumors are very sensitive to irradiation therapy. Others are less so,[1] and still others highly resistant. To be of greatest bene-

fit, irradiation therapy must be started early. If delayed too long its value will be greatly minimized. Generally speaking, the more embryomatous the tumor, the more likely will it be affected by irradiation treatment.[2]

In this connection again the hormonic test is an important indication of the effect of this type of treatment upon the neoplasm. As a matter of fact, the sensitivity of the tumor to irradiation can be determined by the test.[2] Thus the hormonic test indicates the radiosensitivity of a tumor much more definitely and certainly than the study of the structure alone. Attention is called to the fact, however, that in mixed tumors the more rapidly growing and perhaps major portion of the tumor may disappear under this form of therapy while the more highly resistant malignant areas will remain.[1] This is of course a danger for which one must constantly be on his guard.

REPORT OF A CASE

N. M., white male, aged 30 years, first consulted me for his present trouble on September 22, 1937. He said that he felt a mass in the lower right abdominal quadrant for two weeks before deciding to see a doctor. However, for six months prior to this he had been losing weight rapidly—losing twenty-five pounds during this time. His appetite was good, but he suffered some from indigestion. The bowels were regular, no cough and no disturbance in urination. His past history was essentially negative except for pneumonia four years previously.

Examination showed him to be well developed and nourished. His reflexes were normal. Mouth essentially negative, as were also the neck and thorax. The abdomen presented a firm, globular, painless mass, pretty well fixed, lying in the lower right abdominal quadrant. The striking size of the mass in addition to the patient's attitude of not wanting to cooperate made me overlook the external genitals, which were examined only casually by inspection.

Cystoscopy and pyelogram by Dr. R. L. Gordon showed a kink at the right ureteropelvic junction, and the opinion was expressed that the mass palpated was not connected with the urinary tract.

Barium enema showed the opaque material to extend as far as the hepatic flexure at which point it was stopped because of severe pain. Gastrointestinal series showed the mass in the right iliac fossa as appearing to be extra-intestinal and the colon spastic. The lungs were normal. Heart and aorta negative. Pyelogram showed the right ureter to be displaced slightly towards the midline.

Urine entirely negative except for trace of albumin which disappeared later. First blood count showed 17,500 leukocytes and 88 per cent polys. A second count after operation showed 14,250 whites with 88 per cent polys; total red cell count 4,240,000; platelets 210,000; color index 0.8. Clotting and bleeding time 2 minutes. Gastric analysis showed free HCl 20; total acidity 40. Examination of feces failed to show ova, parasites or Entameba histolytica.

Operation on September 28, 1937; abdomen opened through a Battle incision; mass dissected free from the surrounding structures, after being recognized as an undescended right testis. There was no evidence of enlarged lymph nodes after complete dissection of area was done. The appendix was very firmly fixed to mass and removed in the usual way. A large area in abdomen remained without peritoneal covering, into which was dropped the cecum.

Report of pathologist showed the mass to be an embryomatous type of teratoma that showed high malignant potentialities.

Patient made uneventful recovery, leaving the hospital on October 17, 1937, nine days after being operated upon. Since leaving the hospital he has had several irradiation treatments, and two hormonic tests have been negative.

On October 15 he weighed 149 pounds. However he was feeling pretty well. From this time on he gradually, although slowly at first, gained weight, weighing 181¼ pounds on April 13 last. His general condition at present is excellent and there is not the slightest evidence that there is any recurrence of the growth.

SUMMARY

A case of teratoma of the testis is reported together with a review of the important clinical features of neoplasia of the testes.

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DISCUSSION

Dr. R. L. Gordon: Dr. Loria has left me very little to discuss, as he has covered the subject so thoroughly. One point that he brought out is particularly true, that the average physician thinks there are a great many more teratoma testes than actually do occur; in fact it is a rather rare tumor. I looked up teratoma of the testes in 1926, and the statistics which Dr. Loria gave as to the rela-

tive occurrence of these tumors is almost the same as twelve years ago.

The coming of the Aschheim-Zondek test will no doubt give some of these people more chance, because some of these tumors, chorionic type, react positively to the Aschheim-Zondek test, and their true nature will be diagnosed earlier. Another thing, if the test has been positive before operation, a re-check will be of inestimable value as to whether they are cured, or at least to give some idea of the prognosis in the case. Unfortunately the test is not a specific for all teratoma testes.

In regard to metastasis, I know that quite a number of men formerly removed the retro-peritoneal lymph nodes. Personally, I think this is a waste of time, and I do not think the results warrant the additional trauma, and the additional length of time under the anesthetic, as these glands can be sterilized by deep roentgen ray, which should always be given after operation anyway to prevent metastasis to other parts of the body. A mistakén conception by some practitioners is that there is metastasis to the inguinal glands; this is not true. Metastasis is to the deep lymph nodes along the larger vessels, and from these to other parts of the body. The inguinal lymph glands do not become enlarged in teratoma testes, unless there is an adhesion between the tumor and the scrotum.

As to the handling of this case, I think Dr. Loria is to be highly commended. The patient was completely worked up, even to a pyelogram to exclude a possible low kidney tumor. Although the patient is apparently well, and the Aschheim-Zondek test is negative, one cannot be sure that he is well under three to five years.

Dr. L. Fortier: Dr. Loria has talked quite a bit on the radiologic view of this subject. I have seen about five cases at Hotel Dieu. Three have died and two are still living. One man received extensive treatment over the whole abdomen and remained in good state for approximately six months and then developed metastases in the lungs. We had not included the chest in our field of treatment. I recall another patient who had a large mass on the right testicle and in the abdomen. There was considerable relief from pain but no regress in size of tumors. I remember one of these cases, patient now dead, that had both breasts enlarged and even lactation was present. This occurred postoperatively when there was metastasis in the abdomen.

Dr. M. Couret :Dr. Loria has gone very deeply into the subject of testicular embryomas and has given us many facts which we should all know and remember about these growths: without this knowledge it is almost impossible to explain many phenomena and curious behavior of these tumors or to give an intelligent prognosis on a case. To go into minute explanations of the behavior and origin and characteristics of teratomas would require more time than we can afford to take up.

There seems to be an awful confusion about embryomas. I think the main reason for this is that we do not understand or keep in mind the origin of mixed tumors. If I am permitted, I will attempt to lay stress and explain some of the important points that Dr. Loria has brought out, particularly concerning the origin, malignant manifestations, and behavior towards the Aschheim-Zondek reaction of these tumors. To understand the origin of mixed tumors, whether teratomas or teratoblastomas, to which groups the embryomas belong, we must keep in mind the major phases of the development of the embryo, for while the fertilized ovum represents the supreme totipotent cell, division and many subdivisions of this cell produce cells that are also totipotential. So that until we reach the ultimate division of embryonal cells into the mother cells of the respective tissues, we meet totipotent, pleuripotent, and unipotent cells.

To simplify matters I like to pick out a few high spots in the development of the embryo as a guide to the origin of these tumors. Of course this is only grossly correct. First, the ovum; second, the primordial blastomeres; third, the germinal blastomeres from which point the sex cells appear; fourth, the point of division into the ectoderm, entoderm, and mesoderm, and fifth, the ultimate division of these into the mother cells of the respective tissues of the body. From this it is evident that while the fertilized ovum must be recognized as the principal and primary cell, we must also remember that fully developed twins may develop from a cell of any division of this ovum as long as it can produce a sufficient amount and orderly placement of tissue of all kinds to do so. Twins and triplets which very closely resemble each other are considered as offsprings of a single ovum.

When, however, actual division takes place later in the development of the embryo an incomplete child or monster (epiganthus) is the result. It is then easy to understand how from this point on as these cells divide further, first one and then another tissue drops out, so to say, until finally the stray or detached cell can produce but one type of tissue. During this time the cells are toti—, pleuri—, and finally unipotent. Neoplasms that spring from any of these cells are called teratomas if from totipotent cells (dermoids and embryomas), teratoblastomas if from pleuripotent cells, (mixed tumors and dermoids), and blastomas if of unipotent cells as adenomas, carcinomas, fibromas, or sarcomas.

Now, the fertilized ovum is not the only cell with totipotent powers. We must also consider the sex cells which appear about the time of development of and perhaps from germinal blastomeres. Whether these cells contain chromatin of both the future ovum and spermatozoa, they are considered bisexual (parthenogenetic) and misplaced ones are probably responsible for more teratomas and teratoblastomas than cells from the other origin. Such tumors because of their origin will more consistently give the positive Aschheim because they are more likely to include cells capable of producing placental tissue, whereas others would have to originate from cells at or higher than the third phase. It is for this reason that this test cannot always be depended upon as a laboratory diagnosis and for prognosis unless it was positive before the primary tumor was removed.

I have used the terms, teratoma, teratoblastoma, and blastoma indifferently for benign as well as malignant growths: the terms dermoid, benign mixed tumors, adenomas, fibromas, are usually used as denoting benign types and the terms embryomas, carcinomas, sarcomas, chorioepitheliomas, indicative of malignancy.

Of course all embryomas are expected to recur or metastasize. Rarely, they do not. Why? We do not know. We do not expect the benign dermoids ever to give trouble when once removed. This is the rule but there is an occasional exception. For sometimes there are among the adult type of tissue embryonal groups that may or may not have been detected when the tumor was removed. The metastases of these are sometimes confused with other tumors entirely independent of the original one and again they may be recognized as definite metastatic growths.

The Aschheim test can be depended upon only if the embryomas and dermoids contain hormone producing cells. In these cases the test will become negative when the primary growth is removed (unless there are early metastases present), to appear again after metastases occur. In such dermoids and embryomas that do not contain hormone producing cells, the Aschheim test will be negative and remain so to the end. (Salient points were illustrated by lantern slides).

Dr. F. L. Loria As regards the Aschheim-Zondek test, I want to make clear the fact that this test is only significant when it is positive. When it is negative it carries no importance. In this respect it is very much like the Wassermann test in syphilis. I overlooked mentioning that metastases to the inguinal lymph nodes never occur except when the scrotum is involved. In conclusion, I am of the opinion that the Aschheim-Zondek test has added tremendously to our information of these tumors.

BANANA AND BANANA POWDER THERAPY IN DIARRHEAL DISEASES OF INFANTS AND YOUNG CHILDREN*

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The use of the ripe banana has been rightfully accepted as a standard measure in the treatment of celiac disease and also as an article of diet for normal infants and young children. More recently, the development of banana therapy in the acute diarrheal disturbances of infants and young children has followed closely the use of raw apple and apple powder in these conditions.

LITERATURE

The principal contributions on this subject have been advanced by the European investigators, Fanconi (1931), Baumann and Forschner-Böke (1934), and Theophil Baumann (1936). In America, Joslin of the University of Maryland, (1936) and Brubaker at the Children's Hospital of Philadelphia (1936), have made extensive studies on this subject, using both ripe banana and banana powder. Baumann and Forschner-Böke in 1934 published a paper entitled "Studies on the Therapeutic Action of Apple and Banana Diet." They studied the relative merits of the apple and banana and concluded that in the older nurslings and younger children, the banana diet gives better results than the apple diet. They noted the loss in weight during treatment was far greater with the apple than with the banana. They attributed this difference not only to the greater caloric value of the banana, but also to the considerable amount of chlorine and the sodium and potassium content present in the banana. These factors cause an increased water retention and prevent too great a loss in weight.

Abt in the 1936 Year Book of Pediatrics reviewed the later work of Baumann published during that year. The latter found no advantage of the raw fruit diet (bananas, apples or apple powder) over other forms of therapy in cases of acute and subacute intestinal disturbances in the first nine months of life. He

*Read before the Orleans Parish Medical Society May 9, 1938.

stated, however, that in older infants the raw fruit diet is the most advantageous form of treatment. The diarrhea is more quickly controlled and there is less danger of recurrence. He again concluded that the banana diet was preferable to the apple diet because of its higher caloric and salt content. The greater mineral alkali content of banana leads to better digestion of protein and assures normal metabolism. He preferred apple powder to apples because it does not contain the irritating fibers of fresh apples. Fruit juices and industrial pectin products had not been used successfully thus far (1936).

Joslin of the University of Maryland reported in 1936 the study of banana and banana powder in three groups of cases, totalling 54: (1) the diarrheas, the majority being associated with parenteral infection; (2) the dysenteries; (3) typhoid fever. He summarized his conclusions as follows: (1) It would appear that banana therapy either in the form of the raw, fresh, fully ripe fruit or dehydrated (powder) may be used to advantage in diarrheal diseases; (2) it appears to prevent weight loss; (3) there was an immediate and appreciable reduction in the number of stools.

Brubaker at the Children's Hospital of Philadelphia studied the clinical aspects of the banana therapy in the treatment of 56 cases of acute diarrheal disorders. Twenty-four controlled patients were treated by "well recognized methods of therapy." He summarized his conclusions under two headings: "(1) The use of the banana powder or pulp is more efficacious than the well recognized methods of therapy for acute diarrheal disorders occurring in infants and young children. (2) The banana powder or pulp is a safe therapeutic procedure for infants and young children as prescribed in my series of cases." These results indicate that the banana powder or the banana pulp may receive favorable consideration in the treatment of those intestinal upsets occurring during the summer and fall months in infants and young children. In view of these facts the banana powder or pulp therapy should prove a useful addition to the physicians' armamentarium.

The purpose of this study conducted by me* during the past twelve months was to determine whether or not the favorable results and conclusions of Joslin, Brubaker, and the European investigators on this subject could be confirmed in the New Orleans' climate.

METHODS

The general method of handling these cases was only slightly modified from that of Brubaker. Slight variations were found necessary in some cases in order to obtain better clinical results. The materials used were: (1) fully ripe bananas creamed by the Manning-Bowman creamer; (2) banana powder (Melotose No. 1) (fully ripe) manufactured by Food Concentrates, Incorporated; (3) boiled water.

In the children and infants under thirty pounds the minimal amounts used consisted of one-third banana, or one level tablespoonful of banana powder per pound body weight in twenty-four hours. One and one-half to two ounces of water was used to dilute each tablespoonful of the banana powder. When ripe banana was administered sufficient water was given with the fruit or separately to maintain the daily fluid requirements.

Brubaker divided the total calculated daily amount of banana or banana powder into single feedings every two hours during the twelve hours of the day and double feedings at 10 p. m. and 2 a. m.

In the latter part of our work we divided the total twenty-four hour amount of banana or banana powder into ten single feedings which were fed at 6 a. m., 8 a. m., 10 a. m., 12 noon, 2 p. m., 4 p. m., 6 p. m., 8 p. m., 10 p. m., and 2 a. m.

At the end of forty-eight hours of banana or banana powder and water only, the infant or young child was placed on a so-called "transition diet," consisting of either skimmed cow's milk or skimmed lactic acid milk with banana or banana powder. In the milder diarrheas and in older infants and children other articles of diet were included in the second forty-eight hours of

***Dr. M. D. Sterbcow has been associated with me during the entire work. At this time I wish to express my appreciation for his efficiency and interest in assisting me in the handling of the cases.**

treatment, i. e., strained beef broth, well-cooked cereals, dry toast or crackers. If a recurrence of the diarrhea occurred, the patient was started back on the banana or banana powder treatment of the first forty-eight hours. In the cases of infectious diarrhea and bacillary dysentery, the transition diet consisted of skimmed lactic acid milk with banana or banana powder and, in most instances, was offered for longer than forty-eight hours according to clinical results.

When breast fed infants were treated, the breast milk was withdrawn for forty-eight hours and then resumed at the end of that time. Care should be taken, however, to preserve the supply of breast milk during that time by artificial stimulation.

TYPES OF DIARRHEA

The cases studied included charity patients treated within Charity Hospital of Louisiana and the out patient department and private cases handled at home, at the office, and in private institutions.

The total number of completed cases consisted of the following types of diarrhea:

1.	Dietetic		31
	(a) Mechanical	5	
	(b) Putrefactive	5	
	(c) Fermentative	21	
2.	Infectious		15
3.	Parenteral		30
4.	Bacillary dysentery		2

The reaction and character of the stools and the bacterial flora were studied, when the specimens were available, at the beginning and at the end of forty-eight and ninety-six hours of treatment.

In classifying the results obtained three factors were used in judging same: (1) clinical improvement; (2) a stool frequency of 4 or less in 24 hours; (3) the character of stools (i. e., clinical improvement was found to be associated with a large bulky, mushy, light brown stool and the disappearance of mucus and blood, when the latter were present at the beginning of treatment).

When these favorable results were obtained within forty-eight hours, the term excellent was used; within ninety-six hours, fair; and when not obtained within ninety-six hours, poor.

Mechanical diarrhea is undoubtedly the simplest form of diarrhea and is the result of the feeding of some specific indigestible food article. Five such patients were treated in our series: one with ripe banana and four with banana powder. The average duration of diarrhea at the beginning of treatment was 1.6 days. As to age, all of the five were above one year of age. The weights at the end of the ninety-six hours were not obtained as four of the cases were "cleared up" at the end of twenty-four hours and the fifth within forty-eight hours. The results in all five cases were, therefore, classified as excellent.

Putrefactive diarrhea is attributed to protein indigestion. Five patients of this type were treated: three with ripe banana and two with banana powder. The average duration of the diarrhea before therapy was 5.4 days. All five patients were over one year of age. The average gain in weight was 7.4 ounces; excellent results were obtained in all of them.

Fermentative diarrhea is usually attributed to carbohydrate indigestion. Twenty-one patients were treated: seven with ripe banana and fourteen with banana powder. The average duration of the diarrhea before treatment was five days. Fourteen of the patients were weighed, the average gain being 5.1 ounces. Ten of the patients were over one year and eleven under that age. The results obtained were: excellent, 18; fair, 2; poor, 1 (difficulty being encountered with the transition diet due to an extreme degree of malnutrition).

The term *infectious diarrhea* is used to designate that type of diarrhea in which an infection of the intestine is present and is caused by a number of micro-organisms or non-specific character. Fifteen patients were handled: six with ripe banana and nine with banana powder, with these results: excellent, 12; fair, 3. The average duration at the beginning of treatment was six days. Eleven of the patients were weighed and the average gain in ninety-six hours was 8.1 ounces. Ten of the patients were above one year and five under that age.

The term *parenteral diarrhea* designates that type of diarrhea secondary to infection outside of the intestinal tract. Thirty patients were

treated, seven with ripe banana and 23 with banana powder, with these results: excellent, 22; fair, 4; poor (death), 4. As these cases occurred mostly in the winter months, the diarrhea was the result of some form of respiratory infection (at times associated with other conditions) with the exception of one case, which was secondary to pyelocystitis and septicemia. The average gain in weight was 1.9 ounces in 19 weighed patients. The four deaths of this series were caused not by the diarrhea but by (1) septicemia and pyelocystitis in one case; (2) by bronchopneumonia in the second case; (3) by bronchopneumonia and malnutrition in the third case; and (4) by bronchopneumonia and prematurity in the fourth case. In two of these cases the diarrhea had been checked at the time of death.

The term *bacillary dysentery* is used to indicate that type of infection of the intestine caused by the one of the strains of the B. dysenteriae. Two such patients were treated: one with banana and the other with banana powder. One patient was over one year of age and the other four months old. The duration of the diarrhea in the earlier case was three months; the last one of only a few days. The weight remained stationary in the first case; the child was discharged at the end of six days.

The last case was of a fulminating character and death resulted on the sixth day. Both cases were caused by the Flexner organism. Serotherapy had been used in the first case before banana powder had been instituted.

In practically all of the seventy-eight cases, the therapy was enjoyed by the patient with the mother stating that the infant or child would willingly have taken more than the amount offered. Two patients refused the banana powder but readily took the ripe banana.

Equally good results were obtained when the reaction of the stool was acid or alkaline at the beginning of treatment. No constant relation of the stools and the bacterial flora was found. It was observed, however, that the stools were fewer in number when the reaction was alkaline.

ACTION OF BANANAS

Various reasons have been advanced for the favorable action of the banana. But this subject still remains a very debatable one. Higgins states that with the large stools of the banana-fed infant, and possibly because of them, there is an increase of nitrogen in the stool. There is a corresponding decrease in the nitrogen in the urine. The retention of nitrogen is but little affected by banana diets compared with other sugars. A large part of fecal nitrogen is bacterial. Possibly some of the benefit of the feeding of banana may be the diminution of bacteriolysis in the colon, with diminished absorption of bacterial nitrogen.

Other explanations advanced are the pectin, the malic acid, and the butyric acid theories.

RESUMÉ OF CASES

Classification	Number	Therapy		Age		Results			Weight gain or loss in ounces	Per cent weighed
		B*	BP*	Over 1 yr.	Under 1 yr.	E	F	P		
1. Dietetic										
(a) Mechanical	5	1	4	5		5			—	0
(b) Putrefactive	5	3	2	5		5			+7.4	100
(c) Fermentative	21	7	14	10	11	18	2	1	+5.1	66
2. Infectious	15	6	9	10	5	12	3		+8.1	73
3. Parenteral	30	7	23	21	9	22	4	4	+1.9	63
4. Bacillary dysentery	2	1	1	1	1	1		1	+0.0	50
	—	—	—	—	—	—	—	—	——	—
	78	25	53	52	26	63	9	6	+4.7 (aver. gain)	64

*B—Banana. BP—Banana powder.

SUMMARY

This clinical study has shown that:

1. Banana or banana powder therapy is of distinct advantage even in the first few months of life.

2. Gain in weight is usually recorded and when a loss does take place, it is usually negligible.

3. The characteristic banana stool, as previously described, is usually obtained very early and is associated with clinical improvement.

4. Banana or banana powder therapy is a safe, practicable, and a most efficient method of handling the diarrheas of infants and young children.

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DISCUSSION

Dr. M. D. Sterbcow (New Orleans): From clinical observation, I have found that in many cases stools became gram negative after patient has been fed banana powder or the banana pulp. I also found that when clinical improvement became evident the stool became alkaline. Stools were previously acid in reaction. This observation is similar to that of Joslin of the University of Maryland and others.

In practically all of my patients medication other than banana powder was omitted except in bacillary dysentery. Most of the patients, as stated by Dr. Socola, were practically well in forty-eight hours and were put on a transition diet. This was a great improvement over any other methods found so far, and it is a very simple and most economical method. It is very easy to explain and something that any mother can do. I think this is a great find in the treatment of diarrhea in infants and children.

Dr. E. A. Socola (In conclusion): A point that I failed to mention in my paper is that excellent results were obtained in many cases with banana or banana powder therapy where the usual accepted methods of diarrhea therapy had produced unsatisfactory results.

URINARY INFECTIONS AND THEIR MANAGEMENT*

I. B. ROUGON, M. D.
SHREVEPORT

In presenting this paper I am mindful of the fact that it covers a wide field and for that reason I am attempting to touch only the high spots of the subject.

During the past few years there have been some changes in the treatment of urinary infections. This has been due to the introduction of several new and efficient drugs and the ketogenic diet.

We have come a long way since the days when a pyuria was considered beneficial. In the old days it was thought to be draining poisons from the body. This advancement has been the result of the introduction of the cystoscope and the various diagnostic roentgenologic methods. As a result the science of urology is one of the most exact of the inexact sciences of medicine.

CLASSIFICATION

Infections of the kidney can be briefly classed as pyelitis, pyelonephritis and pyonephrosis. Since practically all renal infections are thought to be blood-borne, a simple pyelitis with involvement of just the pelvis of the kidney must be rare and transitory, and the result of the occasional retrograde infection. Pyelonephritis, as the name implies, is an inflammatory condition of the parenchyma of the kidney as well as the pelvis and is usually of chronic nature and is the result of blood-borne infections. In pyonephrosis, cavitation of the parenchyma exists. This is the result of parenchymal abscesses which communicate with the renal pelvis. If one or more of such cavitations exist

*Read before the fifty-ninth annual meeting of the Louisiana State Medical Society on May 4, 1938 at New Orleans.

and are of any size, whether the infection be pyogenic or tubercular, there is no treatment short of nephrectomy that will cure the condition.

Infection of the ureter usually results from infection spreading from above or, less often, from the bladder, below. There may be infection of the ureter in the female from salpingitis or cervicitis, and, in the male, prostatitis and seminal vesiculitis.

The bladder is rarely the seat of primary infection. It is practically always secondarily infected from the kidney above or the prostate, vesicles or urethra below. Therefore, one can see how futile treatment of a cystitis will be without treatment of the primary seat of infection.

EXAMINATION OF PATIENT

Examination of the patient is essential before a plan of treatment is formed. There are so many types of pathology which may cause a pyuria, which if not first corrected, will lead to failure in treatment. If any obstruction exists it must be corected. Obstructions may exist at the ureteropelvic junction, the result of scar tissue formation following infection, or exist because of some congenital deformity as fibrous tissue bands, or anomalous blood vessels which cause pressure at this point. There is probably no place in surgery where good drainage is as essential as in the urinary tract. There may be strictures of other portions of the ureter. An hypertrophied prostate, or strictures of the urethra, may exist which prevent complete emptying of the bladder.

If pyonephrosis, stones, tumors or a dead kidney exist these conditions must first be appropriately treated before the pyuria can be cleared up.

Thus one can readily see that roentgen rays, pyelograms, function tests and cystoscopy should be done. The blind treatment of pyuria is certainly not very rational in view of the means of examination we have in hand. The least a general practitioner should do is a plain urogram and intravenous pyelogram, which will give some idea of the pathology present and an idea as to the differential function of the kidneys.

A complete urinalysis should be done with examinations of the wet and stained centrifuged sediment. All specimens should be cultured, for the plan of treatment depends to a large extent on the type of organism causing the infection.

Since the majority of renal infections are blood-borne, one must search for foci of infection. The teeth, tonsils and sinuses must be examined as well as the prostate and vesicles. If a focus persists, the urinary infection, if one is able to clear it up at all, will certainly return. The skin may also be the seat of the focus as the majority of carbuncles of the kidney are secondary to a furuncle or abscess of the skin. I may add here in passing that a carbuncle of the kidney frequently exists without any of the urinary findings of infection. This is one of the reasons an early diagnosis of this condition is usually difficult to make.

TREATMENT

There is a difference in the treatment of the acute and chronic urinary infections. Fluids should be forced in the acute infections and this is best done with 5 per cent glucose in saline by vein or clysis. Fluids by mouth do not seem to have the same beneficial effects. Fluids are probably best restricted in the chronic infections for it helps get concentration in the urine of the various drugs administered. Regardless of the type of infection, in the acute stage alkalies often make the patient more comfortable. Uritone intravenously is a very beneficial drug and in spite of the newer drugs urotropin still holds a very definite place in the treatment of urinary infections.

Examination during the acute stage should be limited to a plain urogram, intravenous pyelogram and urinalysis as cystoscopy at this time is not to be advised, unless some obstructive lesion exists as, for example, a stone in the ureter which has blocked the kidney. If there is obstruction due to an enlarged prostate a retention catheter should be strapped in the urethra. Be sure, however, that the infection is not due to the gonococcus as a retention catheter in such a case would most probably lead to epididymitis.

If the infection is of staphylococcal origin,

neosalvarsan in 0.3 gm. doses every three or four days for a few doses is very beneficial and appears in some cases to be almost specific. In streptococcal and staphylococcal infections one must check for foci of infection very carefully. If the infection is due to Bacillus coli I have found that acidification of the urine is the best. This may be done by means of the ketogenic diet. This is a diet high in fats and proteins and low in carbohydrates. It produces a highly acid urine and causes the excretion of beta-hydroxybutyric acid which is at least bacteriostatic, and claimed by some to be bactericidal. The pH of the urine must get to 5.5 or below and be kept there. This can be readily determined by testing the urine several times a day with indicator paper. The patients can be trained to keep check on themselves.

The drawback is, the diet is not palatable and frequently causes gastric upset, making the patient not too willing to cooperate. To carry out this line of treatment hospitalization is often necessary. There is no such thing as an almost ketogenic diet. One must either follow the diet implicitly or change to another form of treatment.

More recently mandelic acid has been made available. The action of this drug is practically the same as beta-hydroxybutyric acid. The urine must be kept at a pH of 5.5 or less for a period of two weeks at which time a rest is given and if necessary one or more courses of treatment given.

If sufficient acidification is not obtained with either mandelic acid or the ketogenic diet this may be augmented by the simultaneous administration of such drugs as ammonium chloride, acid sodium phosphate, or ammonium nitrate. These drugs are used from 15 to 90 grains a day.

This form of treatment is very efficacious in Escherichia coli infection. Some cases of Bacillus aerogenes are benefited, but the majority are not. Streptococcus fecalis responds to this form of treatment.

In the treatment with the ketogenic diet or mandelic acid, the function of the affected kidney must be good because it is essential that mandelic acid or beta-hydroxybutyric acid be excreted in sufficient concentration before results are to be obtained. Thus, in many partially crippled kidneys where we are so anxious for success, we are not able to obtain it. If we are not getting results it is necessary to catheterize the affected kidney and test the pH of the urine, because, though the bladder urine be what we desire, yet the affected kidney may be so damaged as to be unable to put out a urine of high enough acidity to be effective.

Sulfanilamide, the most recent of the urinary drugs is as yet too new, except in gonorrhea, to evaluate. Though elsewhere in the body it is advised for staphylococcal and streptococcal infections, it is also good for bacillary urinary infections. Cook claims it produces very good results in Bacillus aerogenes infection. It will not benefit streptococcus infections at all and these had best be treated by mandelic acid therapy.

My results in gonorrhea have not been as good as some others report. I believe sulfanilamide will cure probably 50 per cent of the cases without further treatment. However, I am sure of the fact that it has reduced the complications to a minimum, and has made the treatment of all cases a much cleaner job. There is also no question that it does ruin the morale of the patient and we find it more difficult to make him remain with us until we are sure he is well. The drug also is rather treacherous, for I have seen patients in whom the discharge ceased very early and repeated examinations over several weeks made one believe the patient was well, only to have him return several weeks later, say after an alcoholic or sexual debauch, with a discharge as profuse and as full of gonococci as when he was first seen.

The various dyes as pyridium, serenium and methylene blue have not proved to be as valuable as their manufacturers would have one believe. They do help the occasional case.

I have tried bacteriophage in only two patients. One case was not a very fair test as the patient had a cystitis cystica. The other case was a woman who had a Bacillus aerogenes infection of the bladder which had produced a membranous exudate like that seen in diphtheria. This membrane covered the trigone. She

received treatment of all kinds over a period of two months with no results at all. In despair bacteriophage was tried and I must say to my surprise the first instillation of the drug caused the first symptomatic relief the patient had experienced. Examination revealed that the membrane had disappeared. The course of treatment was completed and the patient was completely cured.

In the use of bacteriophage it is absolutely essential that a culture of the urine be made because the specific phage of sufficient strength must be used. Reporters claim from 45 to 50 per cent cures with its use, but many others who have tried it have met with failure.

CONCLUSIONS

1. A careful examination of the urogenital tract is essential to determine whether some pathology exists that will not respond to drugs alone before treatment is begun.

2. Careful examinaton of the urine, both microscopic and cultural, should be done as the plan of treatment is dependent on these findings to a great extent.

3. The various therapeutic measures were discussed.

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DISCUSSION

Dr. Edgar Burns (New Orleans): Dr. Rougon has covered the subject very well and after looking over a copy of his paper I find very little to add in the way of discussion except to analyze a number of cases treated with the modern drugs and diet and simply show you the results obtained in each one. (Slides shown).

Dr. I. B. Rougon (In conclusion) The point which I wanted to bring out in this paper was the fact that there are no specific urinary antiseptics. We have lots of valuable urinary antiseptics but in treating these cases we should select the antiseptics most suitable for the particular type of infection with which we are dealing. Pus in the urine means pathology somewhere in the urinary tract and it is up to us to find out where it comes from; whether or not there is interference with drainage and the type of organism causing the pathology, before any intelligent form of treatment is instituted.

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THE SPECIAL SESSION OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

There was held in Chicago, September sixteenth and seventeenth, a very important meeting of the House of Delegates of the American Medical Association. This is one of the very few times that a special meeting of the representatives of the medical profession throughout the country has been called together for special consideration of factors affecting the medical man. Full proceedings of this special session are published in the Journal of the American Medical Association which appeared the following week. Every medical man in the state should devote an hour to the reading of these proceedings and another hour, at least, to giving thought to them. They show to the practitioner of medicine why it was necessary to call a special session, and they will show as well why our profession is opposed to the socialization of medicine. The address of President Abell, of Speaker Shoulders, of President-elect Sleyster, as well as the statement of the Chairman of the Board of Trustees, Doctor Booth, sound the keynote of the meeting and express the sentiments of the medical profession. These addresses definitely should be perused thoughtfully by those who are interested in the future of medicine in this country.

The House convened and, after listening to the addresses mentioned above, it was deemed advisable to appoint a Reference Committee to consider the details of the actions taken at the meeting of the National Health Conference called by the Federal Interdepartmental Committee to Coordinate Health and Welfare Activities. This Committee of the House, on which Doctor Graves, a representative of Louisiana, served, plus several other committees, of one of which Doctor Seemann, the other representative of Louisiana, was chairman, held prolonged meetings to consider various phases of the Health Conference's actions. They gave hearing to the delegates who were not members of the committees and who represented various states, many of which had taken action and had instructed their delegates how they wished them to represent them. After many, many hours of consideration of the problems involved, the committees reported back to the House of Delegates as a whole. It is particularly important that the report of the Reference Committee on consideration of the National Health Program be studied. Very briefly and in abstract, the report of this Committee is appended: Section one recommends the establishment of a federal department of health with a secretary who should be a Cabinet officer and

a doctor of medicine. This section of the report pointed out that public health measures should not include the treatment of disease except under certain unusual circumstances. Section two of the report expressed the opinion that it was not so much a question of expansion of hospital facilities as it was a matter of greater utilization of existing hospital facilities. The Committee's recommendation was accepted and passed by the House of Delegates.

Under section three, it was stated that the medical profession appreciates the necessity to appropriate funds to take care of the medically indigent. It said that politics should be kept out of the procedures adopted to put this into effect, and too, that any provision for medical services should be carried out in cooperation with the local medical profession.

Section four of the Committee's recommendations, which has to do with the general program of medical care, was adopted by the House with one or two slight amendments. In this section, the Committee approved the principle of hospital service insurance, but noted that this insurance should confine itself to provision of hospital facilities and not include medical care. It pointed out that this was a local problem. Then it expressed the opinion that some method to develop cash indemnity insurance to cover the costs of emergency or prolonged illness is practical; it then recognized the soundness of the principles of the workmen's compensation laws. It stated that voluntary indemnity insurance would assist in the solution of the problem of financing sickness.

In section five, the Committee heartily endorsed the principles of compensation for loss of wages during sickness.

As a last recommendation, the Reference Committee advised that a committee of seven physicians representative of the medical profession should be appointed by the Speaker to confer with appropriate federal representatives who are dealing with the proposed National Health Program. This is positive evidence that the medical profession is willing, even anxious to cooperate in every way with those governmental representatives who may consider the whole matter of a National Health Program.

It should be obvious to the man whose medical contacts are only occasional and who has read the report of the meeting in Chicago in the lay press that the medical profession is willing to cooperate in every way possible in the care of the indigent. It is equally plain that the medical profession will do all in their power to improve health conditions in this country and to relieve the low income group of the vicissitudes of sickness. The medical profession, it should be clear, is not holding back the wheels of progress. They are heart and soul, as always, helping the poor, the needy and the sick. As an expression of this desire to be of service, it should be stated that all over this country states, counties and municipalities have in active practice plans to help medically the families of those who are financially handicapped, devised by the medical profession, which are demonstrating that the medical profession is not holding back in doing their share. They are doing it, most definitely. Unfortunately, the most elaborate propaganda ever set up in this world is emanating from Washington. Material from this source apparently has put the physicians on the defensive. There is no need for members of the profession of medicine to act as if they were defending themselves. They positively are not, but the medical profession, as one of the statements from the Reference Committee substantiates, is convinced that a complicated bureaucratic system of medical control has no place in a democratic state, and that it would undoubtedly set up a tax system which would greatly increase the cost of government.

The American medical profession, represented by the committee of doctors appointed by Doctor Shoulders, is willing to sit down with government representatives to discuss sanely, calmly and sensibly the problems of medical care of the economically poor of this country, but they should ask that such a meeting not be motivated by hysterical mouthings, by unsubstantiated data and by facts which are not proved.

POSTMORTEM EXAMINATIONS

There is nothing of greater importance to the progress of medical science and the physi-

cian than properly conducted postmortem examinations. The Utopia would be the opportunity to conduct postmortem examinations on all cases. In all hospitals every effort is used to emphasize the importance of autopsies to the staff and to increase the percentage of autopsies secured. All outstanding medical organizations having anything to do with rating of hospitals consider the percentage of autopsies secured an important index of the efficiency and excellence of that hospital.

In spite of these facts, very little has been done by the medical profession to educate the general lay public in this matter in an attempt to secure their greater cooperation, and what attempts have been made in this direction usually emphasize the importance of postmortem examinations to the progress of medicine by the accumulation of information. Occasionally the point is made in such discussions that the information secured will be of benefit to the family as regards the health of other members. But this phase, the benefit of the postmortem to the family, has been apparently neglected. Often the first introduction the responsible members of the family have to the subject is immediately after the death of a dear one, when they are asked for the permission to do an autopsy, and at that time they are so emotionally upset that they are unable to render an intelligent decision. So, many autopsies are lost.

In a recent paper read before the American College of Physicians*, Dr. Alan Gregg discussed this phase of the subject and offers a suggestion that the layman receive more education in this matter, and that the subject be emphasized in its importance to the layman rather than to the medical profession. As stated before, seldom has it been stated convincingly why laymen should permit or be glad to have autopsies performed.

Doctor Gregg's suggestion is that the lay public should be taught that autopsies are his insurance for securing competent medical attention and increasing the physician's incentive to his best performance. If the layman realized this and had an understanding with the physician at the onset of a serious illness that in the case of a fatal outcome an autopsy would be done, would this not increase the care of the physician and increase necessary consultation? Would this not be a method of suggesting to the layman how to improve his selection of medical care?

So, the advice would be: "Explain to whomever you call that if death comes a postmortem will be required." Perhaps, realizing such a request will be in their own interests, at no greater risk to themselves, the lay public may be taught to seek the postmortem as a method of safeguarding their interest, something to be desired rather than feared.

This approach is new and interesting, and deserves consideration. If it is well thought of, the lay public should be made familiar with this idea by circularizing this matter among them.

—W.

*Gregg, Alan: A broader view of postmortem examinations, Ann. Int. Med., 12:249, 1938.

THE HEART IN OBESITY

In the criteria for the classification and diagnosis of heart disease of the New York Tuberculosis and Health Association, approved by the American Heart Association, there is no etiological group to include a possible group of heart disease due to obesity. It seems, therefore, that the possibility of obesity per se producing cardiac disease and insufficiency is either totally overlooked, of questionable significance, or considered of very minor importance. Certainly it seems to be true that there are cases of cardiac insufficiency in which obesity is apparently the only causative factor. It is true that these cases are relatively few and that most cases of cardiac insufficiency in the obese are associated with other organic dysfunction, such as arteriosclerosis, hypertension, et cetera, where obesity is an added secondary factor.

In a recent article by F. A. Willius[1] on this subject, the term "adiposity of the heart" is offered as the most appropriate term for the involvement of the heart in obesity. The pathology, as far as the heart is concerned, consists in a penetration of the fatty tissue between the heart muscle bundles and sometimes even between the individual muscle fibers. In addi-

tion, there is, of course, generalized increased fat in practically all of the tissues of the body. The accumulation of fat over the heart, especially over the right ventricle, is also demonstrated, and both of these factors cause mechanical and nutritional embarrassment. Doctor Willius discusses a study of 136 hearts in obese patients by Smith and Willius[2] in which they show that in 7 per cent of these cases "adiposity of the heart" was the only etiological factor responsible for the production of congestive heart failure.

It seems important, therefore, that we realize that in addition to the hazards of obesity with which we are already very familiar, and which the insurance companies have always carefully regarded, there is this additional, rather poorly recognized danger to be thought of. The summary of the article mentioned enumerates the causes of embarrassment of the heart and circulation to be due to the excessive fatty deposits in and around the myocardium; the increase of cardiac work through increase in body weight; the increase in cardiac work because of the increased vascular bed in the fatty deposits, and increased total metabolism of these obese individuals.

—W.

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PUBLIC WELFARE SERVICE

In the September issue of the Journal, in the Transactions of The Orleans Parish Medical Society, the complete outline of the working arrangement made by The Orleans Parish Medical Society with the Department of Public Welfare of New Orleans was published. As stated, the instructions were largely tentative or subject to change. It is noteworthy that 143 doctors have volunteered to assist in this cooperation with the Department of Public Welfare to furnish medical service and surgical service to more than 7,000 persons on the roles of the Department of Public Welfare. It seems that the arrangement has been carefully and thoughtfully worked out and should be a practical method of dealing with this problem. Any local physicians desiring further information regarding this matter may communicate with the Orleans Parish office.

—W.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR

October 3. Board of Directors, The Orleans Parish Medical Society, 8 p. m.

October 3. Pathologic Conference, Hotel Dieu, 8:15 p. m.

October 4. Eye, Ear, Nose and Throat Hospital Staff, 8 p. m.

October 4. Clinical Pathological Conference, Charity Hospital and L. S. U. Medical Center, 2 p. m.

October 4. Hutchinson Memorial Clinic Staff, 8 p. m.

October 4. Mercy Hospital Staff, 8 p. m.

October 5. Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

October 10. ORLEANS PARISH MEDICAL SOCIETY, 8 p. m.

October 12. Clinical Pathological Conference, Charity Hospital and L. S. U. Medical Center, L. S. U. Medical Center, 2 p. m.

October 12. Touro Infirmary Staff, 8 p. m.

October 12. New Orleans Hospital Council, Hotel Dieu, 8 p. m.

October 14. French Hospital Staff, 8 p. m.

October 17. Hotel Dieu Staff, 8 p. m.

October 18. Charity Hospital Medical Staff, 8 p. m.

October 19. Clinical Pathological Conference, Charity Hospital and L. S. U. Medical Center, L. S. U. Medical Center, 2 p. m.

October 19. Charity Hospital Surgical Staff, 8 p. m.

October 20. Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

October 20. Eye, Ear, Nose and Throat Club, 8 p. m.

October 21. I. C. R. R. Hospital Staff, 12 noon.

October 21. New Orleans Dispensary for Women and Children Staff, 8 p. m.

October 24. ORLEANS PARISH MEDICAL SOCIETY, 8 p. m.

October 25. Baptist Hospital Staff, 8 p. m.

October 26. Clinical Pathological Conference, Charity Hospital and L. S. U. Medical Center, L. S. U. Medical Center, 2 p. m.
October 27. Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

During the month of September, no regular meetings were held as the Society was still in summer recess. However, important work was carried on by various committees. The President appointed a special committee to study medical care for low income groups. This committee had several meetings to discuss this question. Dr. Shirley Lyons, President, attended the special meeting of the American Medical Association when this subject was also discussed.

NEWS ITEMS

Drs. Howard Mahorner and Frank L. Ramsay read papers before the South Mississippi Medical Society at Laurel, September 8.

Dr. Cassius L. Peacock, First Vice-President of the Louisiana State Medical Society, visited the seventh and third districts in the interest of the membership drive of the State Society.

Dr. Alton Ochsner was guest speaker of the Utah State Medical Society at their meeting September 1-3, and of the Cleveland Academy of Science, September 16.

Dr. John H. Musser addressed the members of the American Hospital Association in Dallas on Monday, September 26, and the Tarrant County Graduate Medical Assembly in Fort Worth on Tuesday, September 27.

Dr. Rudolph Matas is on the editorial board of the new journal, The American Journal of Medical Jurisprudence, the first number of which has just come to the office of the Journal.

There is an opening in pediatrics and general medicine on the staff of a privately owned hospital. The applicant should be one of intensive pediatric internship and residency, a young man, preferably married.

For further details, apply to the Department of Pediatrics of Tulane University.

Gilbert C. Anderson, M. D.,
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

SECOND DISTRICT MEDICAL SOCIETY

A meeting of the Second District Medical Society was held on September 15, at the Metairie Golf Club. Dr. J. L. Smith was host and the following members were present: Drs. P. A. Donaldson, E. P. Feucht, J. B. Gray, W. F. Guillotte, J. E. Clayton, L. T. Donaldson, Jr., L. O. Waguespack, N. K. Edrington, J. W. Atkinson, J. S. Kopfler, A. V. Friedrichs, R. F. Sharp, J. L. Smith and Fred S. Herrin.

The following officers were elected for the coming year:

President: Dr. J. E. Clayton, Norco.
Vice-President: Dr. R. F. Sharp, New Orleans
Secretary-Treasurer: Dr. F. S. Herrin, Destrehan.
Delegate: Dr. J. S. Parker, Reserve.
Alternate: Dr. J. S. Kopfler, Kenner.

Dr. A. V. Friedrichs will be host at the October meeting, which will be held at the Colonial Country Club.

Fred S. Herrin, M. D., Sec.

TULANE POSTGRADUATE CLINICS

During the week of October 24-29, 1938, the faculty of the School of Medicine, through the Department of Graduate Medical Studies, will give intensive medical instruction in medicine and its allied branches and surgery and its branches. The forenoons will be devoted to dry clinics and the afternoons to fifteen minute talks with five minutes between lectures for questions and answers. The only charge for the course is the registration fee of $5.00.

SPECIAL MEETING OF HOUSE OF DELEGATES

At the special called meeting of the House of Delegates of the American Medical Association, there were invited to attend not only the official delegates of the House, but also, as guests of the American Medical Association without the privilege of voting, the secretaries of the state medical societies throughout the country and the editors of their constituent medical journals. Dr. W. H. Seemann and Dr. J. Q. Graves attended in their official capacity; Dr. J. H. Musser represented the New Orleans Medical and Surgical Journal; Dr. Shirley C. Lyons represented the Orleans Parish Medical Society as well as served as the representative of Dr. P. T. Talbot who was out of town.

AN INVITATION

To All Physicians of the South:

The Oklahoma County Medical Society takes pride in the fact that on November 15-18 of this year it will act as host to the Southern Medical Association. This great meeting will be the culmination of dreams and desires which began many years ago and which have slowly come to pass through the growth of our city to a point of size

and prominence which enables us properly to take care of such a large number of guests. From the beginning we have realized that in order to entertain six to eight thousand doctor friends, we must have sufficient hotel facilities and a sufficiently large auditorium to make the meeting both comfortable and instructive to all concerned. We are happy to say that we now possess both.

The new Municipal Auditorium is one of the most beautiful architectural creations which has been constructed during recent years. It is located in the downtown district and is surrounded by other buildings of the Civic Center group. Its main auditorium will seat seven thousand with great comfort. Its acoustic facilities are so excellent that those in the back seats can hear as well as those close up to the platform. Its Hall of Mirrors will accommodate twelve hundred. Its Little Theater will seat five hundred; and it has twenty-four committee and conference rooms, each of which will accommodate audiences of fifty to four hundred, thus taking care of any number of sectional meetings which may be listed on the program. Under such conditions it will not be necessary for visiting physicians to go about from hotel to hotel or from church to theater, scattering their energies walking from one section of the meeting to another.

Not only is our auditorium capable of handling the Southern Medical Association, but we are happy to announce also that due to recent hotel construction, Oklahoma City now has enough hotel beds to take care of any convention. In 1935 only three southern cities had more hotel beds than Oklahoma City. Today there are only two, so that those physicians who plan to come and bring their families along with them will be able to find cool, comfortable quarters in which to rest while they are not attending the meeting.

Our local medical organization has been slowly welding itself into a unit of service during the past five or six years and is now trained to handle a large meeting. Through the successful management of the Oklahoma City Clinical Society sessions during the past seven or eight years, our members have learned the duties of hosts. They know how to take care of those who are away from home; they know how to run programs on time; they know also how to see to the successful correlation of social and scientific activities. The tentative plans for this year's program give assurance that it will offer a wealth of scientific papers and exhibits covering the whole field of medical practice. The entire first day will be presented by Oklahoma City members, and there will be in all more than six hundred papers and discussions in nineteen different fields.

Make your plans to be with us November 15-18, and you will learn that Oklahoma City is one of the most interesting places in the United States. Possibly the youngest large city, its phenomenal growth has been due to a large number of factors which other cities look upon with great interest if not almost with envy. Its early history was one of great romance, beginning with the run of 1889 and culminating with the finding of one of the world's largest oil fields underneath the soil which supports its residences and skyscrapers. A program of entertainment has been planned for your diversion, which will feature the various phases of Oklahoma City's history and which will show you what a splendid future is in store for those who make this their home. We feel perfectly sure that if you can find the time to leave your practice and come to Oklahoma City for the Southern Medical Association meeting, you will always be glad you did so.

The Oklahoma County Medical Society.

INTERNATIONAL PHYSICIANS' LUNCHEON CLUB

The International Physicians' Luncheon Club of New York extends a most cordial invitation to physicians visiting New York to be honored guests at an international luncheon, at the same time offering the services of the members of the club for any information they may desire. Luncheon is served at the International Medical Center, 135 East 55 Street, New York, every Tuesday punctually at one o'clock and is over about two o'clock. Physicians are kindly requested to inform the club of their presence not later than 9 a. m. Tuesday by telephoning Wickersham 2-7900, or writing International Physicians' Luncheon Club, 135 East 55 Street, New York.

THE AMERICAN PUBLIC HEALTH ASSOCIATION

The sixty-seventh annual meeting of this association will be held in Kansas City, Missouri, October 25-28, 1938. More than four hundred papers and reports will be presented. The delegates will be drawn from every state in the Union, and from Canada, Cuba and Mexico as well. The speakers' group includes many nationally known leaders.

SYMPOSIUM ON MENTAL HEALTH

A Symposium on Mental Health will be held by the Section on Medical Sciences of the American Association for the Advancement of Science at its winter meeting in Richmond, Virginia, on December 27-31, 1938. This symposium will be the first on the subject of mental hygiene to be presented under the auspices of this great scientific body, and one of the most important and significant conferences ever held in this field.

INTERNATIONAL CONGRESS ON COMPARATIVE PATHOLOGY

This fourth International Congress will be held in Rome, Italy, May 15-20, 1939 and will comprise three sections: (1) Section on Human Medicine; (2) Section on Veterinary Medicine; (3) Section on Phytopathology. The right to attend the Congress will be granted to all who send in a regular application accompanied by the required membership fee in lire (international money order or bank draft). Application and fee may be sent either through the applicant's National Committee or directly to the Secretariat of the Congress, Consiglio Nazionale delle Ricerche, Piazzale delle Scienze, Roma, Italy.

AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

The first American Congress devoted to a consideration of medical, nursing and other problems associated with human reproduction will be held in Cleveland, Ohio, September 11-15, 1939, inclusive. It will be designated as The American Congress on Obstetrics and Gynecology. The promotion and sponsorship of the Congress has been delegated to the American Committee on Maternal Welfare, Inc.

The purpose of this Congress is to afford opportunities for discussing and publicizing the problems associated with human reproduction and the health of women and newborn babies. The value of more generally disseminated knowledge about the processes and problems of human reproduction and of the special diseases of the female generative organs and the newborn is important in the maintenance of public health, and therefore the interest of woman's welfare extends not only to the medical profession but to associated groups, including nurses, public health officials, hospital administrators, eugenists and many others.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next examinations (written and review of case histories) for Group B candidates will be held in various cities of the United States and Canada on Saturday, November 5, 1938, at 2:00 p. m., and on Saturday, February 4, 1939. Application for admission to the written examination scheduled for February 4, 1939, must be filed on an official application form in the office of the Secretary at least sixty days prior to this date (or before December 4, 1938).

The general oral, clinical and pathological examinations for all candidates (Groups A and B) will be conducted by the entire Board, meeting in St. Louis, Missouri, on May 15 and 16, 1939, immediately prior to the annual meeting of the American Medical Association. Application for admission to Group A examinations must be on file in the Secretary's office before April 1, 1939.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Bldg., Pittsburgh (6), Pa.

NEWS ITEMS

Dr. Isidore Cohn, Professor of Surgery and Associate Director of the Department, Graduate School of Medicine, Louisiana State University Medical Center, has been chosen to deliver the Fracture Oration at the annual meeting of the American College of Surgeons in New York on October 20. The subject of Dr. Cohn's address will be "The Evolution of Fracture Treatment."

The Conference on Rural Medicine will take place at The Mary Imogene Bassett Hospital, in Cooperstown, New York, on October 7 and 8, 1938.

At the invitation of the American Congress of Physical Therapy, Dr. Nathan H. Polmer, of the Graduate School of Medicine of the Louisiana State University Medical Center, participated in the postgraduate instruction seminar given by them in connection with their annual meeting in Chicago from September 12-15.

Dr. Thomas Benton Sellers, of the Department of Gynecology of the Graduate School of Medicine of the Louisiana State University Medical Center, gave the John Paine Address at the annual meeting of the Texas Obstetrical and Gynecological Society in San Antonio on September 24. Dr. Sellers conducted a clinic in the morning. In the evening he spoke on "Sterility" and on "Hysterosalpingography."

INFECTIOUS DISEASES IN LOUISIANA

The weekly morbidity reports furnished us by Dr. J. A. O'Hara, epidemiologist for the State of Louisiana, contain the following data: During the thirty-third week of the year, ending August 20, 1938, the diseases prevailing in greatest number were syphilis, pneumonia, pulmonary tuberculosis, cancer, whooping cough, diphtheria, gonorrhea, malaria, typhoid fever and scarlet fever, in that order. The typhoid fever cases had diminished as compared with the previous week, and as compared with the same week of 1937. Orleans Parish reported the greatest number of these cases, namely three, the rest being scattered throughout ten other parishes. It is interesting to note the marked increase in the number of reported cases of syphilis this year as compared with those of the same week in last year: 332 for this particular week of 1938 as compared with 44 for the same week of 1937. Two cases of poliomyelitis were reported,

one in East Baton Rouge Parish and one in Orleans. During the thirty-fourth week, ending August 27, 1938, practically the same diseases were in preponderance. The syphilis cases had decreased to 107 and the scarlet fever cases to three. The same number of typhoid fever cases, namely 14, were reported. One case of typhus fever was reported from Rapides Parish. The following week, ending September 3, the diseases were reported as follows: syphilis, 323; malaria, 57; pulmonary tuberculosis, 48; cancer, 42; pneumonia, 34; whooping cough, 22; gonorrhea, 15; and typhoid fever, 13. Scarlet fever had increased to 8. The reported cases of gonorrhea were quite less than the 71 cases reported in the same week of 1937. For the week ending September 10, the most prevalent diseases reported were as follows: syphilis, 200; gonorrhea, 51; whooping cough, 40; pneumonia, 38; pulmonary tuberculosis, 32; cancer, 29; malaria, 27; and typhoid fever, 12. Three cases of septic sore throat were reported at this time in New Orleans.

HEALTH OF NEW ORLEANS

The Weekly Health Index, furnished by the Department of Commerce, Bureau of the Census, reports that during the week ending August 13, 1938, there were 137 deaths in the City of New Orleans, as compared with 154 deaths for the previous week. These were distributed so that there were 86 in the whites and 51 in the negro. There were 22 deaths in children under one year, the same number as had occurred the previous week in that same age group. In the following week, ending August 20, the total number of deaths had increased to 174, 113 white and 61 negro. Twenty-three deaths occurred in children under one year; of these deaths in children under one year, 16 were white and 7 negro. For the week ending August 27, the report shows that the deaths had increased to 211, as compared with 174 the previous and 138 for the three-year average in the corresponding week for 1935-1937. One hundred twenty-nine of these deaths were in the whites and 82 were in the negro. The infant mortality under one year had increased to 33, as compared with 23 the previous week, and as compared with 17 for the three-year average. During the week of September 3, 1938, 167 deaths were reported, almost evenly divided 86 whites and 81 negro. The infant mortality had markedly decreased to 7, as compared with 33 the previous week, all of these deaths being among the whites.

WOMAN'S AUXILIARY
Louisiana State Medical Society

President—Mrs. Frederick G. Ellis, Shreveport.

President-elect—Mrs. S. M. Blackshear, New Orleans.

First Vice-President—Mrs. C. A. Martin, Welsh.

Second Vice-President—Mrs. A. G. McHenry, Monroe.

Third Vice-President—Mrs. D. C. McBride, Alexandria.

Fourth Vice-President—Mrs. A. F. Hebert, New Orleans.

Treasurer—Mrs. O. C. Rigby, Shreveport.

Recording Secretary—Mrs. D. T. Milam, Monroe.

Parliamentarian—Mrs. A. A. Herold, Shreveport.

Corresponding Secretary—Mrs. C. B. Erickson, Shreveport.

Historian—Mrs. W. P. Gardiner, New Orleans.

Mrs. Frederick G. Ellis, President of the Woman's Auxiliary to the Louisiana State Medical Society, was the honor guest of the Rapides Parish Auxiliary on September 16. After luncheon, there was a round table discussion of auxiliary affairs, with Mrs. Ellis leading in a very delightful and informing manner. Alexandria is making plans for the State Meeting next spring.

Mrs. R. B. Wallace, 2225 Jackson St., Alexandria, has been appointed Councilor for the Eighth District.

BOOK REVIEWS

Injuries and Diseases of the Hip—Surgery and Conservative Treatment: By Fred. H. Albee. New York, Paul B. Hoeber, Inc. Pp. 298. Price $5.50.

This is the first work written exclusively about affections of the hip. The main purpose of the work is to present the various surgical procedures for hip conditions. The author's methods are presented in detail, as well as the other accepted methods.

The first chapter is an introductory one concerning mainly the advances that have been made in hip joint surgery within the past thirty years.

The second and third chapters deal with the armamentarium for hip work and with the surgical anatomy of the hip region. Methods of approach to the hip joint are discussed.

The next chapter takes up fractures of the hip. Here the author takes issue with the other methods of treatment as not being physiologic. He is a strong advocate of the bone-graft peg in intracapsular fractures, both in the recent case and in cases of non-union.

Chapter five treats of dislocations of the hip. In the congenital type the author advocates his bone-graft method of producing a shelf in cases where

operative intervention is indicated.

Tuberculosis and other forms of arthritis are dealt with in the next two chapters. Various other conditions are described in the last five chapters, arthroplasty being treated in one of them.

This work is an exceedingly valuable contribution to orthopedic literature. It covers practically all of the important subjects dealing with the hip joint.

G. C. BATTALORA, M. D.

Essentials of Prescription Writing: By Cary Eggleston, M. D. Philadelphia, W. B. Saunders Co., 1938. Pp. 155. Price $1.50.

This is a very small book containing every essential of prescription writing. Differing from many texts on this subject, it does not contain a large number of written prescriptions, each to be used for some particular disease or condition. Careful attention is given the proper construction of a prescription, each part being clearly and thoroughly explained in its chronologic order. For the physicians who write prescriptions in Latin, there will be found a very useful review of the necessary Latin grammar. The chapters on vehicles and incompatibilities are brief and for all practical purposes embody everything that goes to make the difference between a well written and a poorly written prescription.

The book, while especially well suited for medical students' use, has an undeniable place with every practitioner. As a result of highly specialized proprietaries combined with the success of highly trained detail men, the present day tendency is away from the "real prescription," the writing of which demands a knowledge of the U. S. P. and National Formulary drugs and preparations.

L. A. MONTE, M. D.

Medical Writing: By James H. Dempster, M. A., M. D. St. Paul, Bruce Publishing Co., 1937. Pp. 168. Price $2.50.

This publication starts the medical author at the very beginning of his preparation of the manuscript and carries him through to the completed work. The book tells how to prepare medical papers, how to secure the best types of illustrations, how to get up a bibliography, how to list references, how to get the manuscript off to the editor, how to correct proof and how to do everything as a matter of fact concerned with the submission of a well prepared, well thought out and accurately written manuscript. There are some very excellent suggestions in the book which the neophyte or even the experienced medical writer could very well make use of to the satisfaction of himself and to the pleasure of the editor.

Possibly the hearty approval of this book by the reviewer may be motivated by selfishness, but it is possible to assure the medical writer that his manuscript is very much more likely to be acceptable to an editor if it is well written and carefully prepared, irrespective of the contents of the manuscript, than if it is untidy, poorly written and typographically wretched.

J. H. MUSSER, M. D.

The Conquest of Cholera: By J. S. Chambers, M. D. New York, Macmillan Co., 1938. Pp. 366. Price $4.75.

This is really a fascinating book. It is well written and intelligently constructed with a keen historical appreciation of how the disease cholera affected this country at the time it was rife. The author traces various cholera epidemics that occurred in this country from the time of the first invasion in 1832 until the time of the last real epidemic nearly 65 years ago. The person unacquainted with medical history will hardly appreciate the ravages of cholera in the United States and the horrible after-effects of the disease. At times whole communities were almost desolated as result of cholera. The largest cities often became stagnant with business completely at a standstill, not for days or weeks but sometimes for months.

New Orleans was one of the metropolitan communities in the country that suffered bitterly from the disease. There were at least six great epidemics in New Orleans and at least one of them, to read the account of Chambers, was as bad or worse than any yellow fever epidemic in the city. Sometimes this unfortunate city had the misfortune of having yellow fever and cholera at the same time. In the epidemic of 1832, for example, yellow fever antedated cholera by a few weeks and then it appeared. One-sixth of the population of the city died in the course of twelve days, a frightful mortality. It came back again in 1833 and within three weeks 1,800 people had died of it. "The towns and plantations of the lower parishes were the scene of frightful destruction." Covington, St. Martinsville, Franklin were almost abandoned. Near Franklin one plantation had 44 deaths in 48 hours. General Wade Hampton on his plantation lost 700 out of 1500 slaves. Sometimes the epidemics spread with frightful rapidity as in the epidemic of 1849 that was brought to the city by the Steamship Swanton, although Dr. Fenner in his Southern Medical Report for 1849 says that cholera was here before the arrival of that ship. The epidemic of 1873 was noteworthy because New Orleans was accused of letting cholera into the country. This was the last epidemic of any moment in this country or New Orleans. Bacteriologists in a short time discovered the cause of the disease with the natural corollary of how to prevent it.

Incidentally many of the data and bibliography concerning cholera in New Orleans were supplied

to Chambers by Dr. Rudolph Matas.

There are some interesting sidelights on cholera and its relationship to New Orleans. Stone and Hunt, two of the really great physicians of New Orleans, came to this city as result very largely of cholera. Stone developed cholera after leaving New York. He landed in Charleston sick with the disease and was taken care of by Thomas Hunt. Stone was on his way to New Orleans at the time. As a result of the friendship that developed between the two men, Hunt threw his lot in with that of Stone and came to New Orleans. Here he quite promptly organized a medical school and Stone became a member of the staff until he retired in 1872. At the time of his death he was the most eminent physician and surgeon in the South and New Orleans' most loved medical teacher.

One of the interesting accounts of the book is the treatment that was carried out by some of the doctors. Dr. Cook, for example, advocated doses of calomel, one tablespoonful at a dose. In the case report of one patient, during the course of his sickness he had at least 17 tablespoonful of the drug, somewhat over a pound in the course of four days. Another interesting sidelight has to do with the possible means of transmission of the disease. It was thought to be due to bad air. Hence the development of the name "mal-aria" which later was used to describe the disease which was transmitted by mosquitoes.

Chambers' book may be read with pleasure and profit by the layman as well as the physician. It is really quite absorbing. Only one criticism might be made, namely that there has been too much detail incorporated concerning each and every individual epidemic. Historically it may be of value to know there were three cases in this town, and five in another town, twelve in another place, but it becomes just a little tiresome to have these minute details of small places and few cases recounted repeatedly. At times the author makes use of the same words too frequently. Thus, on page 262 in the course of six lines the word "complete" is used three times. These are minor criticisms and while slightly irritating do not in any way militate against the inherent excellent qualities of the book.

J. H. Musser, M. D.

The Heart in Pregnancy: By Julius Jensen. St. Louis, C. V. Mosby Co., 1938. Pp. 371. Price $5.50.

The author has brought together in a systematic fashion practically all the important data relating to heart disease in pregnancy. From an extensive bibliography which is appended, he has gathered the recorded facts, classified them and analyzed them critically.

The book starts with a section on the effects of pregnancy and the physiologic changes accompanying it upon the normal heart. Here such changes as the increase in body weight, the variations in vital capacity, and the effects of changes in metabolism are considered. Next are considered the means by which the heart meets the increased demands of pregnancy and the accompanying cardiac changes, including mechanismal disturbances.

Much space is devoted to rheumatic heart disease, the most important type of organic heart disease in pregnant women. This discussion covers all phases of the problem from incidence, diagnosis and prognosis to management of such patients, conduct of labor and problems of anesthesia. The non-rheumatic group is then considered under the headings of bacterial endocarditis, and syphilitic, congenital, degenerative, kyphoscoliotic and thyrotoxic heart disease.

In a field such as this, in which so many major problems are unsettled, one finds a host of complicating data. The author has, in general, exercised extreme care in pointing out the discrepancies and in bringing these points to light. Such a detailed analysis of world-wide data has also shown that many dogmas, for example, in prognostication, are without foundation. Such changes in attitude have resulted from the modern turn from concepts based solely upon anatomic changes to those emphasizing cardiac function as well.

The book represents an intelligent amassing of data in a field in which such a work is sorely needed.

W. A. Sodeman, M. D.

Practice of Orthopedic Surgery: By T. P. McMurray, M. B., M. Ch., F. R. C. S. (Edin.). Baltimore, William Wood & Co., 1937. Pp. 471. Price $5.00.

In 25 chapters this author presents a brief resume of the principles of orthopedic surgery and his experience with treatment. He does not include many of the discussions and methods included in other texts, but presents briefly and concisely his own views of the subject. The illustrations are well selected, original and excellent. The subject matter is brought up to date and obsolete procedures and methods of treatment have been omitted. The author's experience and standing warrant the somewhat didactic style of the book and, although it is rather abbreviated, it is useful both for reference and for a student textbook.

Guy A. Caldwell, M. D.

Crippled Children: Their Treatment and Orthopedic Nursing: By Earl D. McBride, B. S., M. D., F. A. C. S., in collaboration with Winifred R. Sink, A. B., R. N. St. Louis, C. V. Mosby Co., 1937. Pp. 379. Price $3.50.

The second edition of this textbook on orthopedic nursing, compiled with the assistance of Miss

Sink, is a great improvement on the first edition. The text has been amplified and clarified and the illustrations are much better. There are adequate descriptions of orthopedic equipment, braces, plaster work, traction apparatus and physical therapy measures in addition to the presentation of the common diseases and deformities treated in an orthopedic hospital service. The text is written in simple language easily comprehended by student nurses and lay workers.

This book is a valuable addition to any hospital library, an excellent textbook for nurses and a good reference work for social service and lay workers interested in the care of crippled children.

GUY A. CALDWELL, M. D.

Diseases of Women: By Ten Teachers under the Direction of Clifford White, Edited by Sir Comyns Berkeley, Clifford White, Frank Cook. Baltimore, William Wood & Company, 1938. Pp. 492. Price 18 shillings.

An excellent volume of 472 pages covering every phase of gynecologic disorder. The subject matter is well arranged and presented in an authoritative manner. Whether it be the chapter on cervicitis, or that on tumors, or endocrine disorders, or upon any other subject, the conclusions drawn by the authors show the results of a wide clinical experience and a thorough knowledge of the literature.

The illustrations do not meet the standards of those usually found in textbooks of gynecology, but in spite of this the volume is a very valuable edition and worthy of being read by anyone who is engaged in treating the diseases of women.

CONRAD G. COLLINS, M. D.

The International Medical Annual: Baltimore, William Wood and Company, 1938. Pp. 615. Price, $6.00.

The book is a review of the medical literature of the world of 1936 and the first part of 1937, being condensed into book form with only instructive articles being selected. This review of literature is done by thirty-five prominent English physicians, each reviewing the literature in his own field of medicine.

By reading through this book, one is able to find out what is going on and what is being done in the entire medical world: For instance, that in Leningrad, Russia, during February and March, 1936, there were approximately 500,000 cases of influenza, and that they tried to determine the etiology of this disease by human experimentation; also, that in China prostatic hypertrophy is very uncommon. Facts as these help one to know what is going on throughout the medical world, and not be confined to his own locality or country.

This book, as all books have, has strong and weak parts in it, but, taking it all in all, it is above the average review of literature.

FRANK L. RAMSAY, M. D.

A Synopsis of the Diagnosis of the Acute Surgical Diseases of the Abdomen: By John A. Hardy. St. Louis, C. V. Mosby Co., 1938. Pp. 345. Price, $4.50.

Using an extended synopsis form, the author of this small-sized volume presents, in unusual completeness, the diagnosis of those conditions which are ordinarily referred to as acute surgical diseases of the abdomen. He also considers certain other conditions for which early surgical intervention is desirable or which mimic the so-called acute surgical diseases of the abdomen. Although clinical study of the patient is emphasized, laboratory aids to diagnosis are discussed.

The author repeatedly indicates the value of studying any exudate, transudate, or other extravasated fluid which may be aspirated from the peritoneal cavity in obscure cases. It is surprising that repeated enemas are included among the methods of diagnostic study in suspected intestinal obstruction.

Repetition or cross-entry of a number of the signs, symptoms, or other findings which are scattered throughout the volume would increase the completeness of several sections of the book, and would enhance the value of the work for quick reference purposes.

Pen and ink line drawings illustrate some of the lesions and findings which are discussed in the text.

AMBROSE STORCK, M. D.

PUBLICATIONS RECEIVED

Lea and Febiger, Philadelphia: Refraction of the Eye by Alfred Cowan, M. D. Applied Anatomy by Robert H. Miller, M. D.

J. B. Lippincott Company, Philadelphia: Anus-Rectum-Sigmoid Colon, Diagnosis and Treatment by Harry Ellicott Bacon, B. S., M. D., F. A. C. S., F. A. P. S. The New International Clinics, Vol. III, edited by George Morris Piersol, M. D.

McGraw-Hill Book Company, Inc., New York and London: You can Sleep Well by Edmund Jacobson, M. D.

The C. V. Mosby Company, St. Louis: Hernia by Leigh F. Watson, M. D. Practical Microbiology and Public Health by William Barnard Sharp, S. M., M. D., Ph. D.

Rockefeller Foundation, New York City: Annual Report of the International Health Division for 1937.

W. B. Saunders Company, Philadelphia: The Principles and Practice of Obstetrics by Joseph B. DeLee, A. M., M. D. Surgical Pathology by William Boyd, M. D., LL. D., M. R. C. P. Ed., F. R C P. Lond., Dipl. Psych., F. R. S. C.

William Wood and Company, Baltimore: Aids to Histology by Alexander Goodall, M. D., F. R. C. P. Edin.